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And *The Nation's Health*

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Volume XIX November 1929 Number 11

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SHERMAN

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American Journal of Public Health
and THE NATION'S HEALTH Vol. XI No. 11

Volume XIX November, 1929 Number 11

Public Health Control*

GEORGE W. FULLER, FELLOW A. P. H. A.

Consulting Engineer, New York, N. Y.

PROGRESS in the public health field during the life of this Association has been enormous. The results are not due solely to any one group of workers—professional, technical or administrative—but have been accomplished by activities in many channels. During the past 40 to 50 years, we have played a prominent part in extending the average length of life of the American people from about 40 to 58 years. This result applies to the expectancy at birth, but is due principally to the salvage of the younger age groups rather than to the extension of the age span of the older age groups.

While racial and other factors are important in our present death rates it is certain that there is much work yet to be done in this country, since in Australia and the Scandinavian countries, expectancy at birth has become about 65 years. It is also highly significant that in the United States alone there are 750,000 lives lost annually due to preventable disease and 25,000,000 persons who are below par physically. It is hardly believable that nearly 2,500,000 persons are constantly sick and that 300,000,000 days of work are lost annually due to illness, with terrific monetary losses—directly due to the cost of medical care, and indirectly to loss of employment.

Generally speaking, the American people no longer live in dread of Asiatic cholera, plague, yellow fever, virulent smallpox or pernicious malaria. There has been a profound lessening of the deaths from typhoid fever, diarrhea and other diseases known to be water-borne, due to the team work of public health workers, physicians and engineers. During the past generation experiences indicate that under highly efficient control certain diseases will show greatly reduced

* Address of the President of the American Public Health Association, presented at the Fifty-eighth Annual Meeting at Minneapolis, Minn., September 30, 1929.

death rates. Typhoid fever and diarrheal diseases have been reduced to minor importance in progressive communities. The occurrence of a typhoid fever epidemic is now regarded as a revelation of community negligence. The communicable diseases generally are fast giving way before the offensive waged by preventive medicine--tuberculosis and diphtheria notably. Smallpox is practically nonexistent where vaccination is properly practiced. Where communities apply themselves properly to the problem, deaths from childbirth show a signal reduction.

The degree of reduction of morbidity and mortality has varied, of course, for different diseases and in different sections of the country. Also the conditions in some parts of the United States are so excellent that they atone statistically for the terribly high infant and general morbidity and mortality rates in certain communities.

We have much to celebrate in public health achievement. However, constructive action and future progress result not from reminiscing about the past and singing praise to our predecessors who richly deserve tribute, but rather from emphasizing our hopes and presenting our plans for achieving still greater benefits for the public welfare in the future.

Frequently it has been customary to deal in presidential addresses with some theme of technical interest, which the speaker has forborne doing in this instance. It seems of greater practical value to the organization to do a bit of accounting in a generous but searching and analytical spirit, and to ask how we stand as to carrying on the objective of the Association—which is to protect and promote public and personal health.

Public health control deals with the organized effort to eliminate disease, to elevate standards of health, and to increase the span of life. It is the application of sanitation and hygiene to individuals en masse. Public health activities have three main phases: First, the basic principles or theory upon which practice is founded; second, the administration and enforcement by health officials of the statute laws emanating from the principles of hygiene and sanitation; and finally, the development of an intelligent public opinion in order to secure legislative and financial support for health administration and research. In summary, therefore, public health control comprises technical knowledge, administrative practice, and public education.

Slow progress in the past was due in part to too much attention having been given to details representing the views of one person or another temporarily in a position of authority. Too little attention has been given to sound principles of organization and to sustained

continuity in the development of a broad program of procedure representing group judgment. The aim of this address is to suggest ways in which public health control may be advanced more rapidly.

RÔLE OF A. P. H. A.

For 58 years the American Public Health Association has been the leading professional organization of the North American continent for the formulation of procedures intended to improve public health control. It is not an official organization of administrative health officers but a professional society, which counts among its membership the leading health administrators of this continent. Its ten sections conduct important meetings annually for the improvement of the technical foundations upon which sound public health practice is based. It is true that there are other national organizations contributing to the broad field of public health; but only in the American Public Health Association have those specialties been developed and tested for nearly three score years and been made to bear on public health administration.

This Association is built on a tradition of service which has made it for the past 58 years the rallying place of public health administrators. Others may be interested in public health from many angles, but this Association seeks particularly to serve the administrator to the end that public welfare may be enhanced; that morbidity and mortality may be reduced, not by rhetorical phrases but by study and counsel as to the best technical methods. This leads naturally to the consideration of a function not uniformly well achieved, namely, standardization when periods of experimentation are at an end. Research to formulate standards in every branch that is collateral to public health service is peculiarly the objective of this Association. Whether it relates to the work of the statistician and the service he may render, the engineer, the nurse, the public health educator, the physician skilled in communicable disease control, the health battalions who watch over the health of school children, the industrial hygienists, or any other group—ours is the particular and peculiar business to advise specific methods of attack. We are an international board of strategy in health matters. Obviously it follows from this that the health officer must transmit and put into effect the theories and the principles of action that are discussed and given validity in this international clearing house.

It follows then that such a body as this should take cognizance of every problem of current interest. As these questions arise, we need effective machinery to interpret, with sound judgment, the specialized

knowledge of health administrators and educators of the North American continent, so that teachers, leading citizens, legislators, and the public at large may be informed and helped to a better understanding. We must have machinery to make vocal our ideas and our ideals.

Complexity of membership and of the interests involved in the A. P. H. A. does not lessen the responsibility of all concerned, to provide the opportunity for health officers to make this Association serve adequately as their professional society. Whether or not they take advantage of such an opportunity rests largely with them. Although the A. P. H. A. should be the rallying point for these sanitarians, it must be clearly borne in mind that it is a going concern with considerable strength as an association of the health officers' coworkers. It includes, in its sections, large numbers of those technically trained individuals who provide the scientific support for the health officers' work, to say nothing of the public health nurse.

At this point differentiation should be made between the professional administrative worker and the professional technical worker. The latter devotes his efforts to improvements in the scientific foundations of public health practice and to the diagnoses of results. To my mind, these technical workers, including engineers, laboratory men, statisticians, and others who constitute the respective sections of this Association, are not professional workers in the sense in which that term is used by some. They are primarily technicians engaged professionally in technical or scientific vocations.

They are not professional workers in the public health field in the sense of having authority to carry out administrative measures founded upon the police powers of the State, or being held responsible for the securing or disbursement of funds, control of personnel, or the establishment of rules or regulations. Yet, while appearing as subordinate, they play a vital part in the teamwork that is implied in the term public health administration.

The administrator must lean heavily upon his technical coworkers for the accuracy of his prescriptions—prescriptions which deal with problems of ventilation, sewage disposal, water supply, milk supply, and dairy products generally; problems of hygiene of the infant, the mother, the school child and the industrial worker; problems of statistics, education, and a host of other problems of daily or emergency occurrence. What is more logical than that there be a close merger between the technicians and those who must give effect and force to their prescriptions, through an Association such as this?

Looking now at the American Public Health Association in the light of the three principal lines of activity in the public health field,

we find that it is comparatively weak as a professional society of official health administrators; relatively strong as an association of technical health workers; and practically inactive as a force in molding public opinion, although we have a section well informed as to educational methods. The organization is capable of making still greater progress; but the set-up of the Association is such that it needs more clearly defined allocation of authority, and executive responsibility.

NEED FOR REORGANIZATION OF THE A. P. H. A.

Having tried to view the functions of the Association in proper perspective, I have felt that it was incumbent upon me during the year of my official service as the head of this organization to consider whether we were as adequately prepared to achieve our objectives, in the light of recent progress and development, as is necessary. In giving an accounting of my stewardship, I desire to inscribe in the history of the Association a record of reappraisal and of reconstruction where necessary.

An effort has been made to visualize a central organization that would better integrate the efforts of the technicians and professional men scattered over this vast expanse of territory from which we draw our membership. The details have been presented in the form of proposed amendments to the Constitution and By-laws, but little can you imagine the efforts that have been required to study these needs in a dispassionate way in order that the central organization may be made to be a still more effective clearing house of official public health work in America, and to serve better those whom it is intended to serve.

RESEARCH AND STANDARDS

Public health progress has been and will continue to be dependent in part on advancement in our knowledge of technical procedure. This in turn involves research and study, in an unbiased way, of statistical data and the results of research, so that after suitable discussion and publicity the promulgation of unified practice and so-called standards—at least tentative standards—may be forthcoming. Through the aid of the committees and sections of this Association, scientific progress is made more effectively than would be possible through the individual efforts of detached workers, regardless of their skill or the comprehensiveness of their performance. The open forum does a world of good even among scientists in separating the wheat from the chaff. To be effective, the discussion and coöperative actions of these individuals, however, need thorough organization.

In many associations there has been a tendency to take up a problem and proceed precipitously in the direction in which it is hoped to

find its solution. Suitable consideration is not given to the scope of the undertaking, either with reference to the adequacy of investigation, or the unbiased discussion of results. Naturally, the conclusiveness of the outcome is more or less jeopardized, and the securing of funds for a definite undertaking is made more difficult.

In advancing scientific knowledge in the field of public health, it is necessary, first, to take some of the more important of the proposed problems and develop them into what the business man calls a definite project. By that is meant that a reasonable inquiry should be made into the available evidence with respect to the given problem. Then ample study should be given to developing a program which comprehensively deals with the scope of the proposed undertaking. The personnel, time and funds needed should be carefully estimated; the prospects as to what advantages may be expected from the results should be weighed; and, finally, decision should be made as to whether such a comprehensive program is worth while. If it is worth while, the program for the development of the problem into a project should be reviewed, criticised, and decided upon in such a way that the enterprise may be sold to those who are in a position to contribute funds for its support. This necessity for translating problems into worthwhile projects, in order to secure financial support, is not always recognized.

There is no reason why financial support from industry should not be secured and accepted for research and standardization activities by the American Public Health Association; provided always that the proposed problems are adequately developed into meritorious projects, and carried out free from any bias in favor of the industry contributing funds. However much we may need the sinews of war to carry on research and standardization efforts we cannot place ourselves in a position which would compromise our dignity or reflect upon our dispassionate and scientific interest in public health.

Progress at a more rapid rate may be made in matters of research and standards if the American Public Health Association organizes more efficiently. Indirectly such advances should be of benefit to the Association in the third aspect of public health control, namely, public health education.

EDUCATION OF THE PUBLIC IN HEALTH MATTERS

The American Public Health Association has not progressed very far in educating the public in matters of personal hygiene, in supporting adequate legislation, or in improving salaries or tenure of office of health officers.

Its efforts to reach laymen who have a real interest in public health and other welfare undertakings have not been conspicuously successful, if we except the work of the Committee on Administrative Practice, with its recent contacts with Chambers of Commerce and the lectures on the Chautauqua platforms which the A. P. H. A. has directed through arrangements made possible by the Milbank Memorial Fund. The Association's progress, in a coöperative educational way, in affiliated state and regional societies has necessarily been slow.

Progress by voluntary health agencies as a whole, in the view of some, has been retarded by overlapping, uneconomical and uncoordinated efforts, particularly in the field of public health education. Too much attention by far has been given to details, and not enough to guiding principles of action. Efforts have been made to do too much at a time. So much attention has been given to examination of leaves and the characteristics of a few trees, that the relation of the forest to the whole landscape has not been clearly visualized.

It would probably be wise to place on the health officers of the A. P. H. A. the initial responsibility of selecting two or three aspects of public health which might reasonably be made the basis of effective education of the public. It would probably be feasible for the A. P. H. A. to invite other health agencies to attend a conference to adopt, in principle, initial steps necessary for increasing the knowledge of the public in specific phases of public health work. If a suitable topic is selected, support of the conference could presumably be obtained for the appointment of a steering committee to develop an appropriate program of action which in time could be translated into an effective project.

It is unwise to attempt to get any wholesale amalgamation of various voluntary agencies. Let each continue to function as effectively as it can. But it would seem feasible to do constructive, coöperative work through the federation type of organization. Several federations—which need not be permanent—could be developed, each to carry out a specific project. One federation might be formed, for instance, to secure wide popular interest in periodic health examination. When that campaign had been reasonably successful, that federation could be dissolved. A second federation dealing with another item might have substantial differences in personnel and sources of financial support. Three or four such federations might be in existence at the same time, each tackling one problem, through coöperative and coordinated work, developed in accordance with sound principles. Such programs along federated or coöperative lines could apparently get financial support. Such beginnings, even in a modest way, would

engender progressively mutual understanding and confidence among the numerous agencies now in the field, and in such a general movement the A. P. H. A. could render real service if it would participate in the initiation of such a program.

POPULAR HEALTH JOURNAL

There is not now being widely distributed to the people of the North American continent authentic information in simple language which would create a harmonious viewpoint on matters of individual and community health. The material at present is technical and smacks of propaganda. Competition among unofficial and professional agencies causes unbalanced and even conflicting reactions on the public.

There is a real demand for a popular priced monthly health magazine, sold on the news-stands. It need not conflict with existing journals. With its management organized along effective lines, embodying principles of federation as above set forth, financial support could doubtless be secured for such a journal for the necessary initial period. The undertaking should be self-supporting in a few years. With expert management, a low subscription rate, and the coöperation of industry, a large circulation should be possible which would attract advertising at high rates.

In the development of such a program, as outlined, the American Public Health Association can serve as a nucleus for a coöperative and coördinated plan.

RELATION TO ORGANIZED MEDICINE

The medical profession plays an important part in matters of the health of the individual, but probably more so in curative than in preventive medicine. Modern medical training is slowly changing this view, and ultimately the community aspects of health work will appear more important than is now the case with many of the older members of the profession. In the meantime, differences of opinion and lack of mutual understanding are unfortunately apparent. It is gratifying to note that the A. P. H. A. is establishing committees to deal with this particularly important phase of future public health activity.

It will be wise for public health agencies of all types to take the medical profession into their confidence, to encourage the teaching of the principles of public health in medical schools, and to interfere as little as practicable with the private practitioner, in carrying forward modern public health work. Physicians have had some cause for fault

finding in the past, and it is to be hoped that a spirit of friendly and effective coöperation, as well as a program of mutual benefit, may ultimately result from discussion. This cannot be done on any wholesale basis; but conferences of fair minded representatives can progressively take up one phase at a time, and arrive at mutually satisfactory conclusions. Surely it is to the advantage of no one to have such antagonisms continue. The A. P. H. A. should be able to create gradually a better understanding between the practicing physicians and those related to their work from the standpoint of public health control.

SUMMARY

This address is intended to emphasize the need for setting up principles of procedure for a more efficient control of public health activities, particularly as these relate to service rendered to health officers and others of the A. P. H. A. The principal items stressed are as follows:

1. Reorganize the A. P. H. A. to bring about stabilization of administration; clarification of the authority and the allocation of responsibility of its officers; and the establishment of better methods of financing and program making; with the continuance of the excellent work of the Committee on Administrative Practice.

2. Lessen the overlapping of efforts by voluntary health agencies, by securing support for specific undertakings recommended by the health officers' group.

3. Provide an effective and scientific organ with popular appeal for expression on problems of today that affect public health.

4. Endeavor to promote better relations between medical practitioners and public health workers.

5. Strengthen the position of the A. P. H. A. in matters of research and standards and, after giving due consideration to various problems, concentrate upon the most timely and necessary ones, with a view to developing them into specific projects. Secure more adequate financial support for such undertakings from sources that will not compromise our independence, self-respect or dignity.

6. Put the responsibility on the administrative health officers for strengthening their strictly professional activities in this Association, giving them ample opportunity to develop and exercise leadership in the affairs of A. P. H. A.; for concentrating on topics that are most helpful and valuable to them and to their communities; and then expect of them the full discharge of their responsibilities.

The Sewage Disposal Problem of Minneapolis and St. Paul*

J. A. CHILDS

Chief Engineer and Secretary, Metropolitan Drainage Commission, St. Paul, Minn.

IN order to understand clearly the sewage disposal problem which now confronts the Twin Cities it is necessary to know something of the history of the Mississippi River, as well as its physical condition, and to see how changes wrought by man have affected this problem.

The Mississippi River has its source in the numerous lakes in northern Minnesota. It flows in a southerly direction a distance of nearly 2,500 miles to the Gulf of Mexico and it has a total drainage area of nearly 1,240,000 square miles.

Since the first settlers entered the country, the river has been a very faithful servant. It was the first trade artery for the early traders and trappers. For many years steamboats on the river carried considerable commerce and made possible the early settlement of the Northwest. The river also has been used extensively as a means of cheap transportation of logs to the saw mills, and at one time supported extensive and profitable clamming industries. Many of the early settlements including Minneapolis and St. Paul owed their existence to the river and the facilities afforded by it. Though to a large extent that faster means of conveyance, the railroad, has taken the place of the river as a means of transportation, the river has been put to work in other ways. It now furnishes a great amount of power for domestic and industrial uses, and is the principal source of water supply for both Minneapolis and St. Paul as well as for about 20 municipalities in Iowa, Illinois, and Missouri. The river has received for many years, and is now receiving—for the most part in an untreated state—the sewage and industrial wastes of the cities along its course.

Before the advent of the white man the 500-mile stretch of river from its source to St. Paul was for the most part a rapidly flowing stream with a total drop of about 750 feet. The 100-mile stretch

* Read before the Public Health Engineering Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 1, 1929.

above Minneapolis has an average fall of over 3 feet per mile. The construction of power dams has changed a portion of this stretch from a rapidly flowing stream to a series of quiescent pools, altering the natural conditions, particularly as regards ice coverage and surface aeration.

RIVER FLUCTUATIONS AND OXYGEN CONTENT

The ability of a river to receive and assimilate waste matter satisfactorily is dependent upon several important factors, among which are volume of flow, and the dissolved oxygen content. The discharge of the Mississippi fluctuates widely, the recorded average monthly flows at St. Paul ranging from 1,300 cubic feet to nearly 60,000 cubic feet per second. The dissolved oxygen content of the river entering Minneapolis also ranges from about 6 to nearly 14 p.p.m. The period of minimum oxygen content (about 6 p.p.m.) occurs twice a year, usually in February and in July. The low oxygen content in winter is caused by ice coverage which prevents surface aeration; the low oxygen content in midsummer is largely the result of decomposition of organic material which takes place more rapidly at higher temperatures. When the time of minimum dissolved oxygen content coincides with a low river discharge, which is often true, a critical condition is created.

Thus there are likely to be two critical periods, one occurring during the latter part of the winter, the other in midsummer, both of which must be considered in determining the degree of sewage treatment necessary. It is during the critical winter period that fish life in Lake Pepin, about 45 miles below St. Paul, is most seriously affected. It is during the critical summer season that nuisances are most likely to exist.

TWIN CITY LOCK AND DAM

A dam known as the Twin City Lock and Dam was constructed in the river between Minneapolis and St. Paul in 1917. This dam is about 33 feet in height, and has formed a pool of relatively quiet water about 5 miles in length, extending up stream to the Washington Avenue bridge in Minneapolis. All but one of the sewers of Minneapolis, and several of those of St. Paul discharge into the river above the dam.

Prior to the construction of the Twin City Lock and Dam in 1917, the sewage was swept away by the rapid current, so that the effect of pollution was not particularly apparent in the immediate vicinity of the Twin Cities. The construction of this dam has, however, so retarded the current of the river as to permit the deposit of large quantities of sludge on its bed in the pool above the dam. Soundings

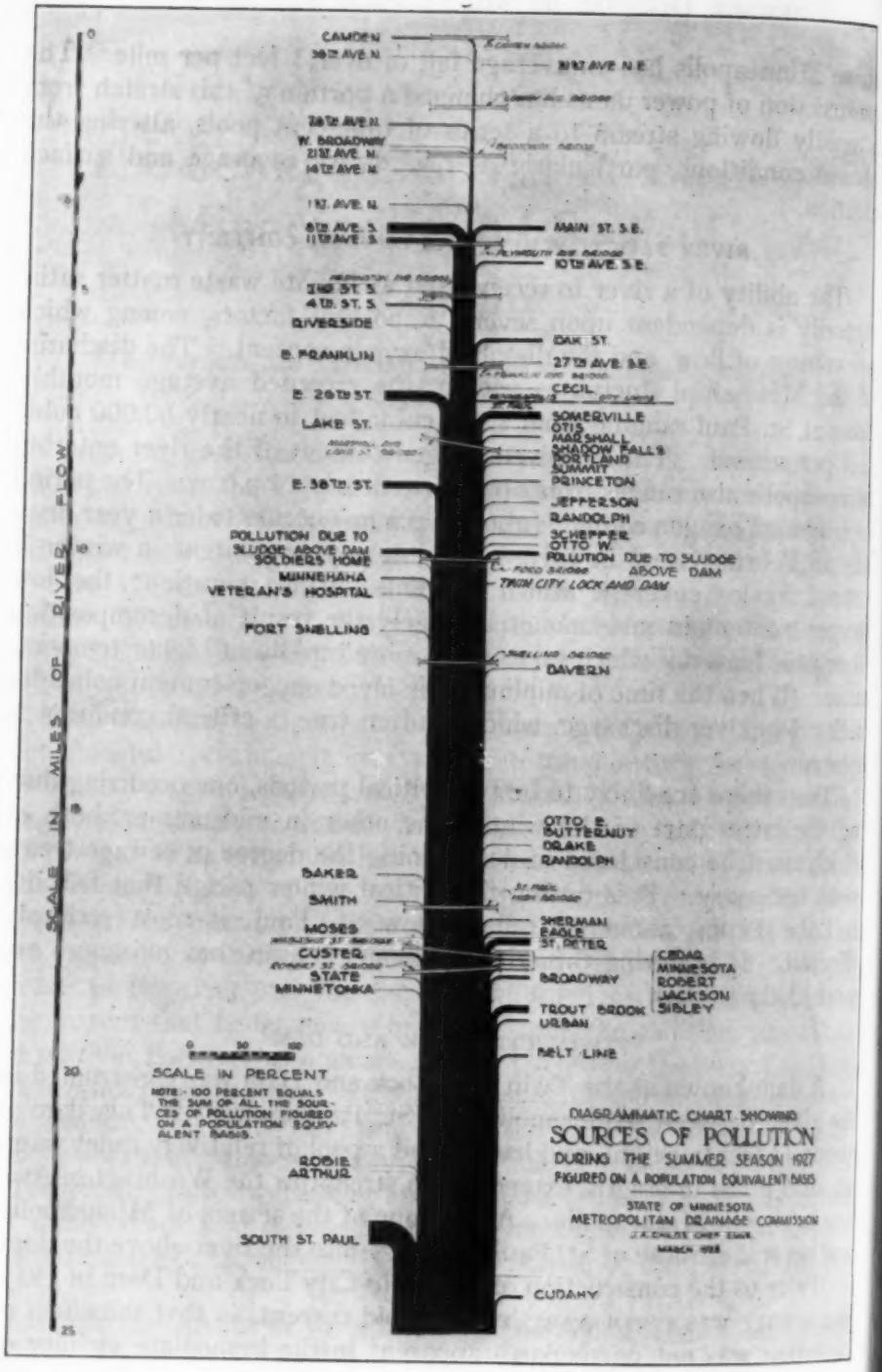


FIGURE I—Sources of Pollution Entering River. Each horizontal line represents a sewer outlet, the weight of the line indicating the per cent of the total pollution in terms of population equivalent contributed by that particular outlet. The width of the vertical line at any point is proportional to the total amount of pollution entering the river in this area above that point.

made in 1928 indicated that about 3,000,000 cubic yards of sludge and silt have been deposited in this pool. The sludge which is deposited during the winter decomposes very slowly until early summer when the higher temperatures stimulate active decomposition as evidenced by rising gas bubbles, odors, and floating masses of sludge.

THE HASTINGS DAM

A new dam is being constructed below St. Paul at Hastings. This dam will create a second pool of relatively quiet water about 30 miles in length extending upstream to the Twin City Lock and Dam. Into this pool will be discharged a large part of the sewage from St. Paul, and all of the packing plant wastes from South St. Paul and Newport. Though the total present sewered population in the Metropolitan Area was estimated in 1927 to have been about 685,000, the industrial wastes have so increased the pollution that its effect was that of the domestic sewage from a population of nearly double that amount, or about 1,300,000. Such, then, is a general survey of the problem confronting the Twin Cities.

SANITARY SURVEY BY U. S. PUBLIC HEALTH SERVICE

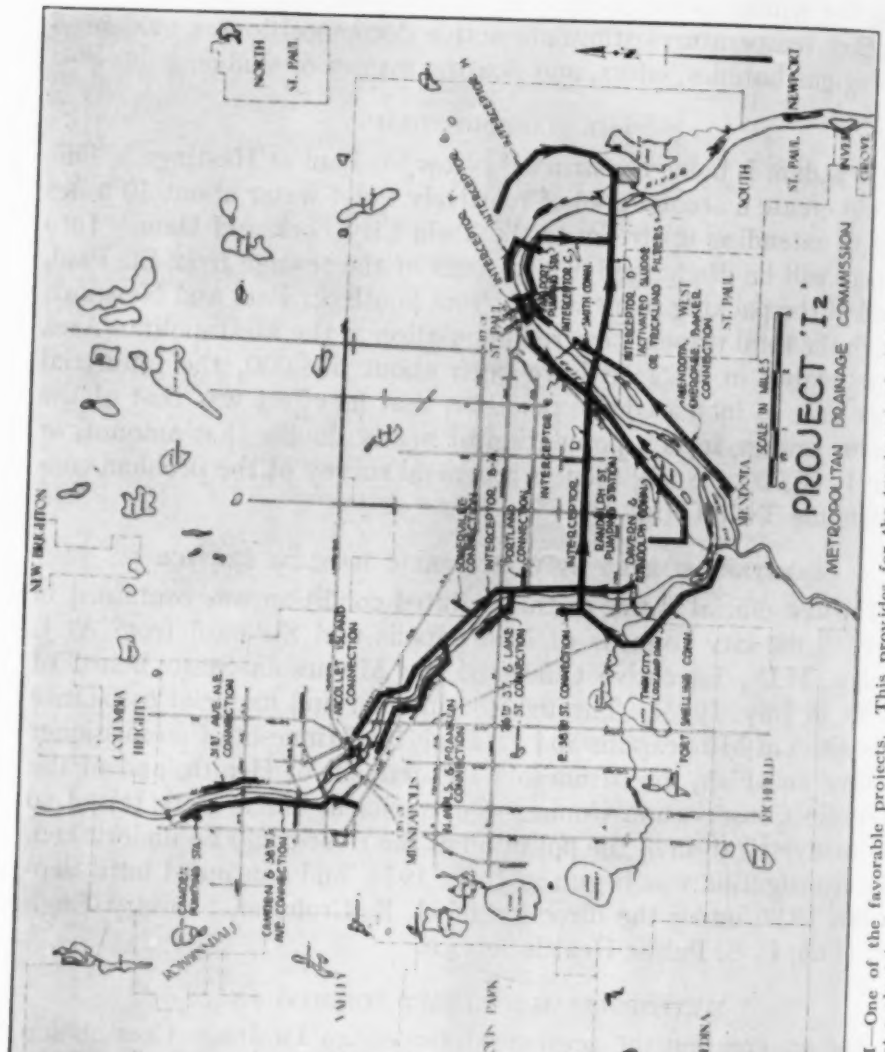
The first official notice of this polluted condition was contained in letters to the city councils of Minneapolis and St. Paul from A. J. Chesley, M.D., Executive Officer of the Minnesota State Board of Health, in July, 1923. Through the interest and financial assistance of the cities of Minneapolis and St. Paul, the Minnesota Commissioner of Game and Fish, the Minnesota Department of Health, and of the Wisconsin Conservation Commission, sufficient funds were raised so that an investigation of the pollution of the river could be undertaken. This investigation was begun in June, 1926, and continued until September, 1927, under the direction of H. R. Crohurst, Sanitary Engineer of the U. S. Public Health Service.

METROPOLITAN DRAINAGE COMMISSION

The act creating the present Metropolitan Drainage Commission was passed by the 1927 legislature. The commission was organized and work actually begun in October of that year and has continued to the present time.

The Commission has received the most hearty coöperation of the Minnesota Department of Health, particularly in connection with the continuation of the stream pollution studies begun by the U. S. Public Health Service.

Among the various phases of the problem studied by the commission are: population, areas, water supplies, existing sewerage sys-


PROJECT 'I2'
METROPOLITAN DRAINAGE COMMISSION
NORTH ST. PAUL
NEW BRIGHTON
COLUMBIA HEIGHTS
MINNEAPOLIS
GOLDEN VALLEY
ST. LOUIS PARK
EDINA
HOPKINS
SOUTH ST. PAUL
NEWPORT
WEST ST. PAUL
MENDOTA
INTERCEPTOR D
ACTIVATED SLUDGE OR TRICKLING FILTERS
INTERCEPTOR E-3
INTERCEPTOR E-2
INTERCEPTOR E-1
INTERCEPTOR D
RANDOLPH ST. PUMPING STATION
DAYTON'S BLUFF
INTERCEPTOR B-4
INTERCEPTOR B-3
INTERCEPTOR B-2
INTERCEPTOR B-1
ROSEVILLE CONNECTION
ROSEVILLE CONNECTION
NORTHLAND CONNECTION
ARCADE ST. CONNECTION
ARCADE ST. CONNECTION
MAPLE ST. CONNECTION
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tems, sewage quantities, sewage characteristics, industrial wastes, extent of treatment required, suitability of plant sites, projects, costs, and construction programs. A statement of the findings of the commission is contained in its 1928 report. Space permits only the briefest summary.

Population—A population census was estimated by sewer districts. This census indicated a total population in 1927 of about 775,000 in the area, of which about 720,000 live within the corporate limits of Minneapolis and St. Paul, and about 685,000 in areas provided with sewers. It is estimated that the population of this area will be about 1,450,000 by the year 1970.

Area—Of about 65,000 acres within the present corporate limits of Minneapolis and St. Paul not including parks and play grounds, about 40,000 acres, or 62.5 per cent, are sewered. It is estimated that a total of about 94,000 acres will be sewered by 1970. It is interesting to note that the population density is at present rather low when compared with many cities, that in Minneapolis being 14.2 per acre and in St. Paul 8.4 per acre.

Water Supplies—These studies included quantities from both public and private sources; hourly, daily, and seasonal fluctuations; and an analysis of the quantities used for domestic, and for commercial and industrial purposes. The total daily consumption was found to be about 100,000,000 gallons.

The Sewerage Systems—The systems of Minneapolis and St. Paul are, with few exceptions, of the combined type, comprising in 1927 a total of over 1,100 miles of pipe. Including the private sewers of the packing plants at South St. Paul and Newport, there is a total of 80 major outlets.

Sewage Quantities—During the winter of 1927 and 1928 weir measurements of sewage flow were made on practically all of the sewer outlets of Minneapolis and St. Paul, South St. Paul, and Newport. The measurements were made at hourly intervals. The total dry weather discharge sewage including waste and ground water was estimated to be about 110 m.g.d.

Sewage Characteristics—Samples of sewage were collected hourly at the same time that the weir gauges were read. Composite 24-hour samples were made from the hourly samples in proportion to the flow at the time of collection. Thus each composite sample represented an average of the entire flow of sewage from the 24-hour period. These samples were subjected to routine laboratory tests such as, the 5-day biochemical oxygen demand, suspended matter, pH values, temperature, and bacteriological examination.

The population equivalents computed from the sewage quantities and the oxygen demand data have been tabulated in such a way that these population equivalents could be compared with the estimated sewered population of the districts. Only a few of the districts may be said to be reasonably free from industries. In most of these districts the population equivalent as calculated from the analytical data was found to be nearly the same as the estimated sewered population. The population equivalent exceeds in many instances the estimated population of the district, because of presence of industrial wastes.

The cumulative pollution is shown in graphic form by Figure I in which each horizontal line represents a sewer outlet, the width of the line representing the proportionate pollution in population equivalent contributed by the sewer outlet which it represents.

Extent of Treatment Required—As previously stated, there are two critical periods which must be considered. It is estimated that complete treatment of the sewage will not be required even by 1970, although treatment somewhat in addition to that effected by clarification will probably be necessary at an early date. The first and most essential step is the construction of intercepting sewers and settling tanks by means of which the major portion of the sewage can be collected and treated by sedimentation. This simple treatment will to a large extent prevent the formation of sludge deposits and will go a long way toward producing the desired results.

PROJECTS

Over twenty projects have been studied and compared. One of the desirable projects is known as I_2, Figure II, which provides for the collection and removal of the sewage from both cities to the Pig's Eye Lake district for treatment and disposal. Though costing more to construct than some of the others, this one will effect the most thorough cleaning up of the river pollution through the Twin Cities, and will place the treatment plant on a large tract of relatively isolated land where ample area for expansion is available.

The cost estimates indicate that about 85 per cent of the sewage of the Twin Cities can be collected and subjected to a clarifying process for an initial construction cost of about $12,000,000 if project I-2 is adopted. No final decision relative to a secondary treatment has been made at this time, although both the activated sludge and trickling filter processes are being considered.

DISCUSSION

C. F. KEYES

Chairman, Metropolitan Drainage Commission, Minneapolis, Minn.

THE outline of the technical phases of the problem confronting the Twin Cities as presented by Mr. Childs is only one phase. The Metropolitan Drainage Commission was created for the purpose of studying this sewage disposal situation, and of reporting how it might best be handled. The commission is simply a study organization without authority to let contracts or do construction work.

Lying immediately outside the corporate limits of Minneapolis and St. Paul are several smaller cities and villages, some of which already have sewerage systems discharging into and using the sewers of Minneapolis and St. Paul as a means of disposing of their sewage and wastes. It is obvious that any scheme which might be adopted should be comprehensive enough to serve the future needs of these outlying municipalities as well as those of Minneapolis and St. Paul. The area actually studied by the commission includes 17 smaller villages and cities and 9 townships located in 5 counties, with a gross acreage about double that of the present area of the Twin Cities.

To the south of St. Paul are the municipalities of South St. Paul and Newport in which large packing plants are located. These packing industries contribute about one-tenth of the total volume of sewage and waste from the entire area, and because this waste is strong, it constitutes about one-fourth of the total pollution. The river cannot be restored to a satisfactory condition without reducing the polluting effect of this waste. This waste may be treated separately or included with the sewage from the Twin Cities. A decision as to ultimate disposal of this waste is not required at this time, since no change in the design of the main intercepting sewers would be required if this waste should later be included with the sewage from the Twin Cities.

It seems advisable for many reasons that Minneapolis and St. Paul should unite for the purpose of carrying out a unified program of sewage disposal. Although public sentiment is generally agreed as to the necessity of providing some immediate means of collecting and treating the sewage wastes of the district, differences of opinion have arisen as to the area which should be included in the district; the methods of financing; the apportionment of costs; and the constitution of the governing body to administer the affairs of the district.

After a study of the problem covering more than a year's time, the Metropolitan Drainage Commission came to the conclusion that the most feasible, practicable, and economical method to relieve the local nuisance conditions in the river adjacent to the Twin Cities was to organize a Metropolitan Sanitary District to include the territories of Minneapolis and St. Paul. Such district would constitute a municipal corporation, would be governed by a board of trustees, and would have power to levy taxes, incur indebtedness, and undertake the construction and operation of a sewage disposal system, including intercepting sewers, pumping stations and treatment works. The commission recognized that the organization of such a district would not entirely solve the problem of river pollution in the Twin Cities area, in that it would not take care of the industrial wastes contributed by the packing industries of South St. Paul and Newport; but it was felt that it would be

impracticable at the outset to attempt to include these independent municipalities as an integral part of the district.

A bill was accordingly drafted and introduced in the Minnesota legislature last winter calling for the creation of a Metropolitan Sanitary District as above outlined. This bill contained a carefully worked out plan for apportioning the costs between the cities of Minneapolis and St. Paul on as equitable a basis as possible. In brief, each city was to pay for the intercepting sewers which serve each city separately. Interceptors used jointly by the two cities were to be paid for jointly in proportion to the assessed valuation of the two cities. The cost of treatment works and operation costs were to be apportioned between the cities in accordance with the volume and pollutional content of the sewage contributed by each city. Provision was also made authorizing the Sanitary District to enter into contract with outside municipalities to receive and treat their sewage at cost.

Owing to objections raised to provisions of the bill, it never came to a vote in the legislature. It was the opinion of the St. Paul group that South St. Paul and Newport should be included in the district at the start, and that the entire costs of construction and operation of the sewage disposal system should be distributed over the entire district by uniform tax levy. Inasmuch as the assessed valuation of South St. Paul and Newport is less than 2 per cent of that of the entire area, while the packing industries of these two communities contribute about one-fourth of the total pollution, this would mean that Minneapolis and St. Paul would pay about 98 per cent of the cost of treating the packing plant wastes. This would increase the cost of sewage disposal to the Twin Cities about 20 per cent above what it would be for the treatment of their sewage alone.

While it is true that the packing industries are a benefit to the Twin Cities, especially St. Paul, and to the Northwest, it was the belief of the commission that any method of financing that would compel the cities of Minneapolis and St. Paul to pay practically the entire cost of the packing house wastes could not be justified. The commission further felt that when a Sanitary District for the Twin Cities was in operation, it should be in a position to contract with the packing industries for the treatment of their wastes on a basis that would be fair to these industries without imposing an undue financial burden upon the Twin Cities.

Should the two cities fail to get together on a joint solution of their sewage disposal problem, the only alternative would be for each city to go it alone. This would involve a greater expense to both cities, and would be especially burdensome to St. Paul; for from a financial standpoint St. Paul has more to gain than Minneapolis, if the two cities united for a joint handling and disposal of their sewage wastes, under such a plan as was proposed for the creation of a Metropolitan Sanitary District. In the meantime the commission is continuing its work in order that plans for a project or projects may be advanced as far as possible, and so that there may be no unnecessary delays in beginning construction, irrespective of what plan shall be ultimately adopted to solve the sewage disposal problem of the Twin City area.

The Problem of Sweets for Children*

IN view of the claims now being made in behalf of a larger use of sweets as food, it behooves us to take our bearings anew in the light of all our present-day knowledge of nutrition.

Counting air and water as free, there are five kinds of substances which make up the "food values" which we acquire when we buy food. These are: (1) the proteins, (2) the fats, (3) the carbohydrates, which include the sugars and starches, (4) the mineral elements, and (5) the vitamins.

In general we do not buy these food value substances separately, or as such; we buy *articles of food* such as bread, meat, milk, fruits and vegetables. Such articles as we have just mentioned contain several kinds of substances of food value and so are *many-sided* foods; whereas articles which furnish only one kind of substance of food value, such as some oils and fats and all pure sugars and starches, are *one-sided* foods.

Now a one-sided food is not necessarily to be avoided; but in order that good food habits may be formed and good nutrition insured, we must be careful to keep one-sided foods from encroaching upon the proper place of the many-sided foods—whether in our eating habits or in our food budgets. That is, both in choosing what to eat, and how much of it, as we go along, and in deciding how to divide up the money which we spend for food, we should keep sweets as well as all other one-sided foods quite strictly in their proper place.

That the eating of candy easily lends itself to abuse is a fact which until recently was clearly recognized by nearly everyone. Even those who indulged freely in sweets agreed that it was an indulgence and not an entirely wholesome food habit. But at present there seems to be on foot a concerted attempt to obscure this fact, and not only is the public being "educated" to eat more sweets, but some writers who undoubtedly have ability and influence are advocating the feeding of more sweets to children. Are their arguments sound?

This question gains added significance through the fact that at the very moment this is being written there arrives a newspaper report that, "The International Sugar Experts Commission, now (April 5,

*Report of the Committee on Nutritional Problems, presented to the Food, Drugs and Nutrition Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 4, 1929.

1929) in secret session at Geneva," proposes "the organization of a widespread educational campaign to demonstrate the desirability of more extensive employment of sugar."

To aid us in forming our own judgment as to whether there really is any such "desirability," let us glance briefly at the different types of food materials which make up the bulk of our food budget, and the significance of each to our nutrition.

Breadstuffs and other grain products (rice is to the Oriental what bread is to us) normally make up the largest and cheapest source of calories and of protein. In these two respects they bring us the most food value for the money. But they are not satisfactory sources of the other two great factors in our nutritional need, the mineral elements and the vitamins.

The meat foods ("flesh, fish and fowl") are rich either in protein or fat or both, which together with their flavors and stimulating extractives give them the properties of "satisfying" and of "staying by." These properties make the meat foods popular and account for the fact that they occupy a large place in the food budgets of most people who can afford them (and perhaps also of many people who, properly speaking, cannot). But it is a very important fact, although difficult for many people to accept, that in general (there are a few exceptions in detail) the meat foods show about the same mineral and vitamin deficiencies as do the grains, so that while breads and meats may form pleasing and satisfying combinations, yet *nutritionally* they can never make a properly balanced diet, and least of all for a growing child—even though a hardy explorer may be able to live a long time upon such a diet without showing or feeling any noticeable injury.

Fruits and vegetables vary greatly in their values as sources of proteins and calories, but these two groups of foods may be counted as one in that they are, in general, important sources of some (not all) of the mineral elements and vitamins, of which both the breadstuffs and the meat foods are but poor or uncertain sources. Hence the fruits and vegetables (at least many of them) are entitled to McCollum's designation of "protective foods," since they tend to protect us from the mineral and vitamin deficiencies which we incur if we live too largely upon the breadstuffs and meat foods.

By far the most important of the protective foods is milk, for it is the most efficient (and almost always the most economical) of all foods in making good the mineral and vitamin deficiencies of the breadstuffs and in insuring the all-round adequacy of the dietary. "The dietary should be built around bread and milk," with fruits and vegetables occupying the places of next importance. The milk, vege-

tables and fruits of such a dietary insure good supplies and excellent forms of proteins, mineral elements, and vitamins, while the bread is an economical and wholesome source of the additional calories needed, and of a generous extra allowance of protein for good measure.

Eggs may be said, in general terms, to stand about midway between milk and meat in their nutritional properties. The fact that eggs blend well with many other things, and aid in the attainment of the varied textures desired in cooked foods, gives them a value of their own in cookery and tends to keep them rather expensive for the food value that they furnish, so that in general they are less economical as "protective food" than milk.

Some of the fats are rich sources of fat-soluble vitamins while others are not. The fats as a group constitute a concentrated source of calories (a compact form of fuel for the body); they stay a relatively long time in the stomach, thus delaying the onset of hunger pangs—a property the lack of which in such foods as bread and turnips was found to put a severe strain upon the morale of both soldiers and civilians in Europe during the war; and in addition to their nutritional significance, fats have their special places in the arts of cookery.

What then is the place of the sweets? Like eggs and fats they are esteemed in cookery as means of attaining the flavors and textures desired in many food mixtures and "made dishes"; but we are here chiefly interested in their nutritional significance. Candied fruits, milk chocolate, ice cream, and so on, are sometimes cited as sweets which convey mineral and vitamin values, and this is true to the extent that they contain fruit, milk, or other of the foods which are good sources of mineral elements and vitamins; but the sugar itself contributes nothing to the food value except as a source of calories.

Children normally are active and spend more calories in proportion to their weight than do any but very active adults; but the children are growing at the same time and ought to get liberal supplies of proteins, vitamins, and mineral elements along with their calories, and it is a sobering thought that sugar, as it now comes into commerce, is the most completely devoid of proteins, vitamins, and mineral elements of all the foods which we give our children. From the nutritional standpoint therefore it would seem that sugar should be of all foods the most cautiously used in feeding children, lest it displace too much of the foods which can do what it cannot, in supplying the proteins, vitamins, and mineral elements which children need so urgently and so abundantly for their healthy growth and development.

We sometimes hear of the "natural craving" of children for sweets; but what sweets do we find in nature? Never do we find in

nature either candy or such concentrated and isolated forms of sugar as are found in the grocery and confectioners' shops. In sweet foods as they actually occur in nature, the sweetness is largely a bait which renders more acceptable to the palate the mother's milk, which is undoubtedly the best of all foods for the young, and also the juices of many fruits and vegetables (and even the saps of some trees), which are of added nutritive value to us because of the mineral elements and vitamins which they contain. (If we trace the "natural" function of sweetness still further back we find that the sweet which we meet in honey was before that contained in the nectar of the flower where it served to bait the bee which, in collecting the nectar for his own use, spreads the pollen which serves to reproduce the flowering plant.) Thus sugar is essentially a bait, or in Bunge's words, "not only an aliment but also a condiment, and easily lends itself, as all such things do, to abuse."

The danger of abuse is of more than one kind. Too much sugar may spoil the appetite for other foods of less pronounced flavor but much more pronounced value in nutrition, and it may displace these more important foods in meeting the calorie needs of the body with the result that while the calorie need is fully met there may be a shortage of some essential mineral element or vitamin; a shortage not detected at the time but detrimental to subsequent growth and health.

It is argued that sugar is good for active children because it is a "quick fuel," and the use of sugar by athletes during endurance contests is cited in support of this idea. The idea has some basis, but it is greatly overworked, if not actually perverted. Who would seriously consider a Marathon race as a suitable exercise for a growing child? And who would seriously claim that the concentration of sugar which can be borne by the fully developed and hardy stomach of an athlete would be equally well suited to the still developing stomach of the growing child which always has enough to do to handle the large amount of food which growth requires, without subjecting it to any unnecessary risk of irritation?

Careful study of much that has recently been written in behalf of increased use of such concentrated sweets as candy leaves us with the distinct conviction that such teaching is not sound from the standpoint of the health interests of children.

In our judgment, it is just as true today as it has been for several years past, that the practical lesson to be learned from the newer knowledge of nutrition is the great importance to health (at all ages and especially in childhood) of giving a more prominent place, in our eating habits and in our food budgets, to what McCollum has called

"the protective foods," i.e., to milk, fruit, and some of the vegetables; and that a "more tolerant" attitude toward sweets for children is not justified except in so far as the use of sugar and other sweets may be practically helpful in preserving the protective foods or facilitating their attractive preparation so that children may be induced to live more largely upon them.

A moderate amount of jam may be good for children—its sweetness may appeal to their palates and its fruit content will almost certainly be good for their health. A liberal amount of ice cream may be good—they may like it because of its sweetness and they will almost certainly be benefited by the extra milk and cream which they thus get.

Without multiplying illustrations, it may be said that in general the proper place of sugar in the food supplies and eating habits of children is not in such concentrated forms as candy, nor in the indiscriminate and excessive sweetening of all kinds of foods, but rather as a preservative and flavor to facilitate the introduction into the child's dietary of larger amounts of the fruit and the milk, the importance of which to child health has been increasingly emphasized with each year's progress in our knowledge of nutrition.

H. C. SHERMAN, *Chairman*
C.-E. A. WINSLOW
E. L. FISK
T. P. B. JONES
D. B. JONES

The Inevitable Assurance

IT would be welcome to see a health book published without the inevitable assurance on the cover page that the author is "free from fads, theories," etc., etc. We do not think it is fair for publishers to handicap their authors by such reiterated protestations. Practically every health book that has come to our attention in the last six months has been thus labelled—that the writer plays no fads, that he has no fanatical views, and that what he has to say represents modern scientific judgment, and so on. As a matter of fact, few individual authors can avoid falling into fads because that is a characteristic of human nature.—*How To Live*, Sept., 1929.

Need for Better Occupation Returns on Death Certificates*

T. F. MURPHY, M. D.

Chief Statistician, Division of Vital Statistics, U. S. Bureau of the Census, Washington, D. C.

FOR a number of years the U. S. Bureau of the Census has been devoting a large part of its attention to the promotion of the satisfactory registration of births and deaths. The work has succeeded to the extent that satisfactory laws are on the statute books of all the states, with the exception of South Dakota, which failed at the session of the legislature in February to enact an adequate law.

In two states, New Mexico and Texas, satisfactory laws have been passed, but the registration in these states has not been given an official test to determine whether it is sufficiently complete to admit them to the registration area. This test is now being made in New Mexico. At the present time, approximately 95.5 per cent of the population of the United States is included in the death registration area, and 94.5 per cent in the birth registration area. While the promotion of registration has been given a great deal of attention by the Division of Vital Statistics, we have always kept in mind not only the desirability, but the almost absolute necessity of procuring more accurate returns. This phase of our work has been carried on for so many years that we consider it a part of our routine labors.

Each year industry grows increasingly more complex and the necessity for safeguarding the health of the workers becomes more urgent and of greater interest. A very large number of the great industrial plants of the present day have well organized health services whose aim it is to prevent accidents, to cure minor ills, to provide recreation, and to use means to build up and preserve the health of their employees. These services are usually supervised by physicians, professional nurses, and trained physical directors. Comprehensive campaigns are carried on urging annual physical examinations for workers; and the better understanding of the value of health gained is to the mutual benefit of the employee and the employer.

In many states employers of labor are required to take out acci-

* Read before the Vital Statistics Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 2, 1929.

dent and mortality insurance for their employees. This requirement is a powerful factor in improving the health and the conditions under which the employees work. The 1930 population schedule, as usual, will include inquiries relative to occupation. These furnish the foundation for determining the mortality in any particular line of work. The Bureau is now revising the index of occupations so that it will be possible to edit the occupational returns received on the population schedule, and the mortality returns on the same basis.

The demand for occupational mortality statistics has reached such proportions that the U. S. Bureau of the Census has felt that this part of the standard certificate should be enlarged, and that definite information of this character should be secured. Consequently, the Bureau and the Committee on Forms and Methods of Statistical Practice of the American Public Health Association prepared the revised standard certificate of death. This form was adopted by this Association through the Vital Statistics Section in October, 1928, in Chicago; and by the Conference of State and Provincial Health Authorities of North America on May 31, 1929, in Washington. Early in 1930, the federal government will take a decennial census of population, and as a result we shall have definite data relative to the 120,000,000 or more inhabitants of our country.

The committee on the revision of the International List of Causes of Death will meet in Paris this October. Taking all of the above facts into consideration it would appear that now is the ideal time to put into use the standard certificates so that the data will be comparable with the material gathered on the population schedules.

Everyone realizes that certain occupations are more hazardous than others. Employees in industries in which dust is a great factor, those exposed to exceedingly hot or cold temperatures, excessive moisture, poisonous vapors, and explosive compounds, are among the workers whose occupations are more hazardous than the average. Granted that a certain occupation is hazardous, the question arises, how hazardous is it? As a matter of fact, how much more dangerous is it than other occupations in the same industry or in other industries?

Occupation is without doubt one of the determining factors in a death rate. In reality, it is a double factor made up partly of the direct hazards of the occupation, and partly of the living conditions pertaining to the occupation which affect both the worker and his family. The presentation of adequate statistics of death, classified according to the occupation of the decedent, should therefore form a part of any comprehensive program for vital statistics. In order that the results may be of the greatest value, it is necessary that the

returns received on our transcripts conform as nearly as possible to the standard list of occupations used for the population census.

Some indication of relative occupational hazard is afforded by the mortality statistics compiled by occupations for the industrial policy holders of certain large life insurance companies; but no mortality statistics have ever been available in this country to give this information on a large scale. The U. S. Bureau of the Census has published no occupational mortality statistics since 1909, although some data were compiled for 1920. Considerable information is available in some of the states with reference to the number of deaths from accident or from disease which may be directly traceable to the workers' occupations. Such data are usually kept by the state department of labor or by the state workmen's compensation commission, but those deaths of workers in which the relation of employment to the cause of death is more or less uniform are seldom recorded. As an illustration, there has long been an idea that persons in certain lines of employment, such as locomotive engineers, were especially liable to die from affections of the kidney. The truth of this contention could be determined by death rates for such occupations.

For the computation of death rates for occupational groups, two kinds of material are needed—deaths classified according to the occupation of the decedent, and population data classified in the same way to form the basis for the rates. It is further necessary that the occupation classification of these two factors, so far as possible, be made on the same basis.

One of the principal difficulties in the way of compiling satisfactory mortality statistics by occupations is that of procuring an accurate return on the death certificate of the occupation followed by the deceased. A recent examination of more than 1,500 certificates selected from representative areas showed that only about 70 per cent contained occupation returns sufficiently complete to afford a basis for satisfactory classification. While information as to the industry is not absolutely required in all cases, it is essential to the accurate classification of a very large number of occupations, and there seems to be no way of assuring its presence when it is needed except to insist on accurate answers to all questions relating to occupation on the death certificates in accordance with instructions.

While the occupational data on the general census schedule are not all complete and satisfactory, the proportion of unsatisfactory returns is very much less than the 30 per cent shown for the death certificates. The reverse ought to be true. For the decennial census, the Bureau must appoint over 100,000 enumerators, who, in their

house-to-house canvass, are required to obtain from the housewife, or some other one, information concerning the 26 or more inquiries for each person on the population schedule.

The information on the certificate of death is usually obtained from a member of the family. As a general proposition, the undertaker, physician, or other person who gathers the information for the certificate of death, is more intelligent and should be more accurate than the average census enumerator. Furthermore, he is recording information with regard to occupations almost daily and not, as in the case of the enumerator, once in 10 years. The objection made in some quarters that this occupation query places a greater burden upon the undertaker or physician does not seem to me to be reasonable.

I have had experience in collecting many thousands of schedules relating to many different lines of industries and, as a result of this experience, I feel that one or two more intelligent questions would be all that would be necessary to obtain more correct data of occupations than the Bureau has been receiving. As an illustration, an examination of the returns made in one area shows that 88 transcripts were received for engineers, and on 54 of this number the occupation was given as stationary engineer—a very definite and satisfactory return. The remaining 34 simply had "engineer" and the Bureau could not, of course, classify them because we were unable to determine whether they were civil, steam, stationary, locomotive, metallurgical, sanitary, or any one of a number of other divisions in that line of work. How simple it would have been to have said "locomotive engineer," "civil engineer," etc.

A hurried examination of a large number of the returns shows that a word or two would be all that would be necessary to place approximately one-half of the unsatisfactory returns in the satisfactory class. As another illustration, we have hundreds of returns with "mill operator" as the occupation. Why not add or substitute "weaver," "spinner," "cotton mill," "stationary fireman," or other descriptive title. It is not at all necessary that a scientific or technical nomenclature should be adopted in order to furnish the Bureau with the information it desires. Simple terms are preferred. If the undertaker will answer the inquiries clearly in one or two words, it will be all that the Bureau requires.

In order that the occupational information may be returned in the same manner on the death certificates as on the population schedule, it is the intention of the Bureau, as soon as we can do so, to print small reference booklets similar to the *Physicians' Pocket Reference* and distribute them rather freely. This booklet in a broad way will

list terms to be avoided, and furnish a number of illustrations of the proper method of answering the inquiries. In this way we hope to place in the hands of all of those who make out death certificates sufficient information to enable them to secure correct answers.

The Bureau does not expect that it will be possible to procure complete occupational returns on all of the mortality certificates during the first, or even the second or third year. It does believe, however, that complete information as to the occupations of decedents is of such definite value that the use of the new certificates should be started generally at the beginning of the coming year. In fact, a number of the
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The Health of Anabolic Nutrition*

FRANCIS LOWELL BURNETT, M. D.

Massachusetts General and Peter Bent Brigham Hospitals, Boston, Mass.

FOOD (is) the medicine of health and medicine the food of sick-

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digestive system, of intestinal rate, some ... healthy.[3]

To consider nutrition from this point of view, the digestive system must be thought of as a highly perfected nutritive apparatus which was purposely designed for maintaining the integrity of the body. Such a mechanism cannot often be imperfect, and therefore variations

* Read before the Food, Drugs, and Nutrition Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 4, 1929.

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It is needless for me to remind the state and city registration officials that, without their hearty coöperation in obtaining complete certificates, the U. S. Bureau of the Census is powerless to compile statistics of mortality, by occupations, of any value to the public health officials, or sanitarians. By refusing to issue burial permits, the registrars can insist that all items on the certificates be completed, thus showing undertakers and others the value to the relatives, to the community, and to the state of having accurate and complete certificates. With the assistance of these officials the U. S. Bureau of the Census should be able to present valuable and interesting occupational mortality statistics.

Hygiene

SIR John St. Clair (born 1754) said:

"Knowledge may be compared to a small fraction of gold, dispersed throughout a great quantity of ore. In its rude condition, the strongest man cannot bear its weight or convey it to a distance; but when the pure metal is separated from the dross, even a child may carry it without difficulty."

So he proceeded to refine the existing publications on hygiene and issued his text-book in four volumes in the year 1807. Comparing this early effort with the latest of many successors one is struck by two things—first how little resemblance there is between the laws of health then and now, and secondly how much more concentrated is the essence than it used to be. One cannot claim that hygiene has become more readable. Those careful dissertations, flavoured with an esoteric insight and adorned with lively foot-notes of a narrative kind on, say, the relative merits of ale and beer as a beverage, or the advantages of dining at seven in the evening rather than at six o'clock; it is hard to see them replaced by snappy paragraphs on "The Digestive Tract."—From *The World's Health*, X, 2: 200 (Apr.–June), 1929.

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FOOD (is) the medicine of health and medicine the food of sickness."[1] "The form and structures of all living organisms are clearly dependent in a large measure upon the quantity and quality of their nutrient. A knowledge of these effects gives a deeper insight into the process of morphogenesis and a means whereby it may be experimentally controlled to a degree hitherto generally unrecognized."[2] The purpose of consuming food is to nourish the body, but on account of the delicate, intricate, and correlated processes of tissue construction and repair, essential or anabolic nutrition is only little by little becoming understood. The action of the vitamins in curing deficiency diseases, the beneficial effects of liver and protein food in blood regeneration, and the reduction of carbohydrate food in restoring the functions of the islands of Langerhans are perhaps phases of anabolic nutrition. On the other hand, when a patient's ways of eating and mode of living are still further taken into account for this kind of assimilation, a subtle cause of disease appears to be revealed, through the means to detect and maintain a state of health.

The essential nutrient substances for the development of this state of health seem to be assimilated only when the aliment passes through the digestive system within the limits of normal absorption. Accordingly, it is detected and maintained by the indexes of absorption. Food in the digestive tract is not in the body, but merely passing through; but when it is adjusted to comply with a final moulding of the intestinal contents, or the presumably normal form of the feces, and also with the time taken by a marked meal to pass through the digestive system, or intestinal rate, some diseased tissue becomes healthy.[3]

To consider nutrition from this point of view, the digestive system must be thought of as a highly perfected nutritive apparatus which was purposely designed for maintaining the integrity of the body. Such a mechanism cannot often be imperfect, and therefore variations

* Read before the Food, Drugs, and Nutrition Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 4, 1929.

in its action are due to the food mixtures put into it. When the aliment is complete, properly proportioned, and thoroughly comminuted, it will complete its cycle of digestion and absorption, and apparently supply nutrient substances for the development and maintenance of an improved state of well-being. In this way, the cure of disease and the restoration of health may not be so much a matter of knowing more about disease, as it is of understanding, regulating, and later maintaining anabolic nutrition for the acquisition and control of health.

INTESTINAL INDIGESTION AND DEFICIENCY DISEASES

At present, health is a vague and variable condition, but the gulf that exists between health and a recognized deficiency disease has been conclusively demonstrated.[4] In this dietary experiment, rats given a vitamin poor food were small and weak, and had a lowered vital resistance; yet they were able to reproduce, and did not show obvious signs of disease. The cause of such a condition is evidently due to a failure of nutrient substances to build up the tissues. May not such a deficiency occur in patients from partially incomplete or other food factors? In the treatment of disease, an attempt is made to restore health. Without an understanding of an exact state of health some human diseases are not only very resistant to all kinds of treatment, but if once allayed are very apt to recur. Many of these are supposed to arise from a metabolic disorder, and as such a cause implies a failure of nutrient substances to build up the cells they are virtually deficiency diseases. Malabsorption is frequently an early and pronounced sign in many of them.[5]

With an understanding of the factors that produce an irritable colon, intestinal indigestion, and malabsorption, the care of the human body must be looked upon from a more intelligent point of view, and, instead of allowing malabsorption to progress until the remote effects of damaged tissue make a diagnosis possible, patients must be educated in the ways of right living to keep a check on the indexes of absorption. In this way they must prevent nutrient substances from going through instead of into them, and acquire and maintain the health of anabolic nutrition. Some persons have been educated in the practice of anabolic nutrition, and in this way metabolic or deficiency diseases may have been prevented. For the most part, however, these health measures have been applied to patients and the cure of disease, in order to obtain a more practical knowledge of the value of this treatment.

The vitamins have become established as necessary requirements for normal nutrition. On general principles, eating too fast and too

much, and the consumption of excessive fat, sweet, highly spiced food, and fruit, do not improve nutrition. The constant use of laxatives, oils, or enemas does not strengthen the body. With an understanding of the control exercised by the proximal colon in anabolic nutrition, the accessory as well as these faulty food factors is made subservient to bodily action, and the intestinal contents are entirely moulded into discrete masses that compose and regulate the presumably normal feces and intestinal rate. On the other hand, when these requirements are not generally fulfilled, the colon becomes irritable and intestinal indigestion ensues, as determined by soft and formless feces and a rapid intestinal rate.

THE PRACTICE OF ANABOLIC NUTRITION

In practice, anabolic nutrition is brought about by educating patients how to eat, rest, and exercise according to the action of their own nutritive apparatus. Inquiries into the ways of eating and mode of living of patients with metabolic or deficiency diseases invariably reveal one or more erroneous practices which must be corrected in order to reduce the irritability of the colon and prevent intestinal indigestion.

Patients are educated through the use of diagrams of the digestive system, roentgenograms of the normal and abnormal colon, pictures of the normal and abnormal feces, figures on the intestinal rate, and the record of a person controlling his health. From these illustrations and records they get a preliminary understanding of the subject, but more detailed instruction should be given from an examination of a week's record of their own nutrition. On the record should be entered the food consumed, the time spent at meals, the time and kind of dejection, and a test of the intestinal rate. For this test the patients ingest 25 c.c. of millet seed or 100 gr. of charcoal immediately after an evening meal. Then the hours that elapse from the ingestion to the first and last appearance of the marker in the feces are noted. With patients having one, and sometimes two normal dejections daily, the marker first appears in about 63 and is last seen in about 134 hours.

From these records of nutrition brought in at varying intervals according to the health measures necessary to adjust, anabolic nutrition may be attained and the disease relieved. The care of the person should not end here, however, because anabolic nutrition must be subsequently maintained to prevent a recurrence, and to cure the disease. Some patients readily acquire a knowledge of the food factors and ways of living that influence nutrition and carry out the

principles afterward. Others find exact ways of eating difficult to understand and maintain. Ordinarily, patients should observe the feces daily and know enough to keep them normal by adjustments of diet, etc. As an additional check on anabolic nutrition, they should test the intestinal rate and weigh the body every month, and finally have a health examination once a year. The records of a few patients taught to cure metabolic or deficiency diseases by these principles of treatment follow. A more detailed study of some of them has already been published,* while others will appear in due time.

An English Jew, 31 years old, has had psoriasis for 13 years. Recently it has become worse and changed to dermatitis exfoliativa. He has also lost 20 lbs. within the last year (see Figure I). He eats a great deal of food, very rapidly; has 2 or 3 soft dejections daily and sometimes gets diarrhea. He was advised to eat slowly and less food. (19. VI. '22)—Has a fair record but the colon has been irritable, the dejections soft and formless, and the intestinal rate is 13–63 hours. (11. VII. '22)—The patient has followed instructions faithfully, acquired normal dejections in a month after the last visit, and the skin has gradually become normal. The intestinal rate is 74–141 hours, and his weight has increased 15 lbs. (see Figure II). (11. III. '24)—Skin continues healthy. Feces generally normal. No record or rate. (3. I. '28)—Continues to be careful of food, and dejections are generally normal. Skin healthy.

FIGURE I—Illustration of marked malnutrition of a man with a metabolic skin disease.

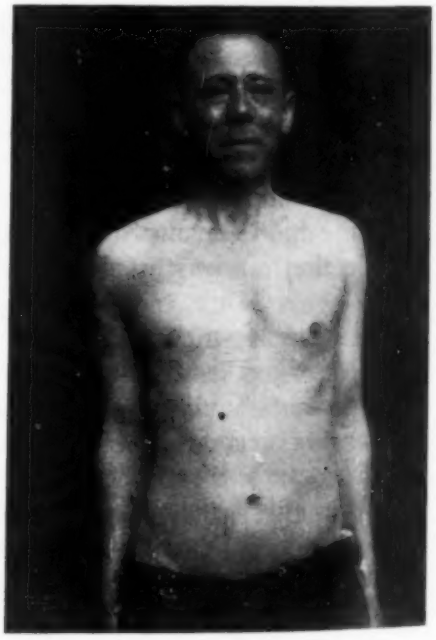

FIGURE II—The healthy skin of the same man after carrying out the principles of anabolic nutrition for 4 months.

A single man, 39, has had recurrent iritis and indigestion every autumn for 6 years. He had gained 50 lbs. in the last 10 years. He ate rapidly and a great deal of starchy food. Weight, 192 lbs. Had 2 large dejections daily. Was advised to reduce food, especially starchy food. (19. XI. '26)—Dyspepsia somewhat less. Feces continues soft and formless with a rate of 19–43 hours. Still eats too much starchy food. As a moving picture operator, his hours are irregular. Was advised to eat a moderate breakfast at 10 A.M. and a dinner at 4.30 P.M. (21. I. '27)—Had an attack of diarrhea a few weeks ago and had slight inflammation of eye. Rate now 18–89 hours, and weight, 172 lbs. (2. VI. '27)—Eyes continue healthy. Dejections becoming formed; rate 41–90 hours, weight, 162 lbs. (18. XI. '27)—Symptomatic indigestion has entirely disappeared and he feels better than he has for years. Is happy on two meals. Feces formed with rate of 43–90 hours, weight, 166 lbs. (19. IV. '28)—Feels well and eyes have been healthy during the winter. Feces generally formed with a rate of 42–90 hours, weight, 170 lbs. Was advised to eat less. (15. XI. '28)—He gets indigestion at times from too much fruit. Rate 42–96 hours, weight, 162 lbs. (16. V. '29)—Feels well, but gets soft dejections from too much food. Rate 43–97 hours, weight, 168 lbs. Less food advised. (29. VI. '29)—Had another attack of iritis, but it was very mild, and responded to a reduction in food. Feces often normal with rate of 24–120 hours, weight reduced to 155 lbs. (27. VII. '29)—Eye healthy again and he feels unusually well. Dejections entirely normal, with a rate of 72–144 hours, weight, 153 lbs.

A widow 64 years old has had arthritis for 7 years. For the last 3 years it has been so severe she has been unable to work. She has a poor appetite, takes physic regularly, and has lost 15 lbs. in 2 years. Weight, 108 lbs. She was told to eliminate physic, eat fruit for two meals, try regularly to have a dejection an hour after breakfast and again before going to bed, but that her dejections would be irregular for a few weeks. (31. VIII. '27)—Still has pain. Dejections are formed and becoming regular without physic, rate 12–134 hours. (28. IX. '27)—Is beginning to feel stronger and has less pain. Dejections have become regular with a rate of 20–156 hours. (19. X. '27)—Has been worrying a good deal and has not slept well. Rate 15–134 hours, weight, 103 lbs. (11. I. '28)—Has much less pain and is able to do a great deal more. Feces generally normal with a rate of 36–108 hours, weight, 106 lbs. (28. III. '28)—Is much improved, rate 36–134 hours, weight, 109 lbs. (24. X. '28)—No longer has pain and joints are freely movable, rate 38–156 hours, weight, 112 lbs. (12. IV. '29)—Has had a little indigestion and pains have returned, rate 15–91 hours, weight, 118 lbs. (10. VI. '29)—She had been eating too much fruit the last month, but recently has had good absorption, with a rate of 38–120 hours, and the indigestion and pains in her joints have entirely disappeared. Weight, 118 lbs.

THE ANABOLIC PROCESSES

Verworn states:

The fundamental fact of life is the metabolism of living substance, which is continually and spontaneously undergoing decomposition and building itself up anew with the help of food substances it takes in. Among the organic matters which compose living substance, proteids form the most important part. . . . The proteids and their compounds . . . are . . . stable . . . , whereas the hypothetical combination which lies at the center of organic metabolism is extraordinarily

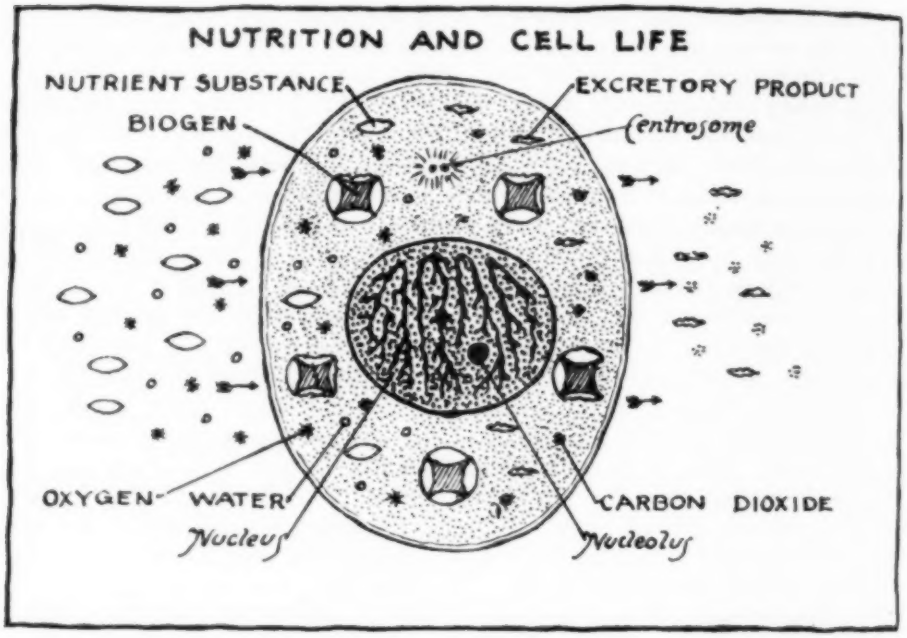

FIGURE III—A diagrammatic illustration of the nutrition of a cell. Nutrient substances, water, and oxygen are seen entering on one side, and excretory products and carbon dioxide are passing out at the other.

labile and continually undergoing spontaneous decomposition. . . . We have to think, therefore, not of ordinary proteids . . . but of still more complicated combinations, the atoms of the molecule of which have a strong tendency to group themselves in new arrangements. Owing to their fundamental importance, these combinations have been termed "biogens." When we come to inquire how such labile biogen molecules are built up out of proteids of food, our knowledge is much restricted. Doubtless the intramolecular addition of inspired oxygen has much to do with it, for living substance deprived of oxygen loses its . . . tendency to decomposition. . . . The decomposition of living substance is always associated with the formation of carbon dioxide. If we accept these views, . . . assimilation is the reformation of biogen molecules by those already existing, aided by food stuffs.[7]

This process is graphically illustrated in Figure III.

Active cells are known to use nutrient substances from the blood; for specimens taken simultaneously from the jugular and mammary veins of a milch cow and analyzed show less sugar and tryptophane in the abdominal vessel,[8,9] thus indicating that these substances were assimilated by the active mammary cells for the formation of milk. The utilization of nutrient substances for the growth of cells in tissue cultures has also been demonstrated.[10]

Young bits of heart, liver, skin, and intestine from chicken embryos grow well in a pure saline fluid, but 11-day tissues require "growth promoting hormones" of a more complex composition.

Serum supplies such a medium, and all tissues grow well through a number of generations. In yeast extract, however, heart muscle alone fails to grow even after the addition of serum, and therefore yeast evidently has an inhibiting effect on the growth of this tissue. After some time liver in serum ceases to form parenchymous, but instead develops less complex fibroblast-like cells. Such a deviation of cellular growth has also been observed in scorbutic guinea pigs." With a complete food, sections of the teeth show an orderly array of the odontoblast layer closely applied to the dentin. In early scurvy, this layer becomes separated, the cells shrunken, and irregular calcium deposits form; but the principal substance is a gelatinous material which is supposed to be a defective product of the odontoblasts. Accordingly, when these highly specialized cells do not receive normal nutrient substances, they exhibit a perversion of function and a dystrophic growth.

A contrast in the gross appearance of deficient and normal bone may be seen in the jaw of a guinea pig shown in Figure IV. This is one of a group which in early life was fed a scorbutic diet, and developed the poor, decalcified material shown in the anterior portion. Before the deficiency disease became too extreme, the animals were given a complete food, and the strong normal bone, seen growing over the other, formed.

From the improved nutrition brought about in patients with psoriasis, iritis, and arthritis, it is evident that nutrient substances

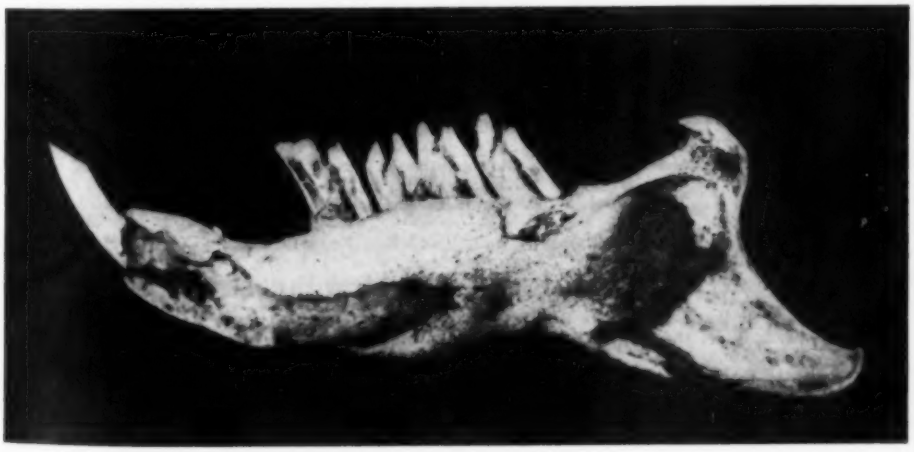

FIGURE IV—The jaw bone of a guinea pig showing the development of a poor, decalcified bone, in the anterior portion, from a scorbutic diet, and strong, normal bone, in the posterior part, from a complete food. (The illustration is used through the kindness of Dr. Percy R. Howe of Boston.)

must have been assimilated by the cells of the skin, eyes, or joints to relieve them of a deficient condition and restore them to health.

The adjustment of a patient's ways of eating and mode of living to acquire this state of health has been brought about by recognizing the digestive system as a highly perfected nutritive apparatus, in which there is a mechanism that controls anabolic nutrition. This is a mechanism by which a secondary digestive pouch is formed of the proximal colon by pulsating constriction rings. In this pouch, nutritive material is kneaded back and forth until a certain kind of absorption occurs, and then the rings mould the intestinal contents into discrete masses that compose the normal feces. This action of the proximal colon has long been known to be normal in many vertebrates.[12] The action is so complex, and so delicately adjusted, that the requirements necessary to bring it about have not been generally observed in man, because the food must be complete, thoroughly comminuted, and properly proportioned.

Rest and exercise also appear to influence this function. Thus the proximal colon serves as an exact, automatic, and sensitive control of the absorption, which is evidently nicely correlated with digestion and assimilation, and regulates the nutrient substances the tissues receive from the food in anabolic nutrition. By the acquisition and subsequent control of this kind of nutrition, a heretofore unrecognized state of health is evidently acquired and maintained, which seems essential for the prevention or cure of some metabolic or deficiency diseases.

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Essential Features in the Design of Sanitary Drinking Fountains*

THE Committee on Plumbing of the American Public Health Association has had insufficient time to prepare a detailed final report upon the subject of the Design of Sanitary Drinking Fountains, as a thorough study of this subject would require circularization of the manufacturers, schools, and public health authorities, to secure comprehensive information as to the nation-wide aspect of the subject. It is desired at this time, however, to present a progress report.

There appears to be a lack of appreciation of the sanitary significance of certain features of the design of drinking fountains, because frequently improperly designed units are installed in schools, railroad stations, and other public places, where in most cases the equipment has been carefully studied before selection. The possibility of infectious diseases of the respiratory tract being transmitted by the use of insanitary drinking fountains has been demonstrated. A vertical jet fountain with an exposed nozzle may be likened to a common drinking cup, which has been condemned by practically all public health agencies. At present, therefore, it appears that both sanitary and insanitary fountains are available to the public; that a public health problem exists; and that apparently on the part of public health authorities there is a lack of appreciation of the necessity for controlling and supervising such fountains. It is very appropriate that the American Public Health Association use its influence in bringing the essential features in the design, construction and operation of sanitary drinking fountains to the attention of its members, the manufacturers of such equipment, and the public.

A committee of the American Water Works Association, similar to this, reported on this subject in 1924 and concluded as follows:

1. All types of drinking fountains with vertical jets are to be condemned.
2. Most types of drinking fountains with slanting jets are to be condemned.
3. To be sanitary, drinking fountains should conform to the following specifications:

   a. The jets shall be slanting.
   b. The orifices of the jets shall be protected in such a manner that they cannot be touched by fingers or lips, or be contaminated by droppings from the mouth, or by splashings from basins beneath the orifices.

* Report of the Committee on Plumbing, presented to the Public Health Engineering Section of the American Public Health Association at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 1, 1929.

c. The guards of the orifices shall be so made that infectious material from the mouth cannot be deposited upon them.

d. All fountains shall be so designed that their proper use is self-evident.

Section 61 of the Railroad Sanitary Code of the U. S, Public Health Service reads as follows:

If drinking fountains of the bubbling type are provided in any railway station, they shall be so made that the drinking is from a free jet projected at an angle to the vertical and not from a jet that is projected vertically or that flows through a filled cup or bowl.

It will be noted that this portion of the railroad sanitary code conforms with the above mentioned conclusions.

Careful consideration by the committee of the requirements in the design, construction and operation of drinking fountains whereby such structures may be in reality sanitary, indicates that the following details should be considered.

1. The fountain should be constructed of impervious material, such as vitreous china, porcelain, enameled cast iron, other metals, or stoneware.

2. The jet of the fountains should issue from a nozzle of non-oxidizing, impervious material set at an angle from the vertical, and at an elevation above the edge of the bowl, so that the end of the nozzle will not be flooded in case a drain from the bowl of the fountain becomes clogged.

3. The end of the nozzle should be protected by non-oxidizing guards to prevent the mouth or nose of persons using the fountain from coming into contact with the nozzle.

4. The inclined jet of water issuing from the nozzle should not touch the guard, thereby causing splattering.

5. The bowl of the fountain should be so designed and proportioned as to be free from corners which would be difficult to clean or which would collect dirt.

6. The bowl should be so proportioned as to prevent unnecessary splashing at a point where the jet falls into the bowl. Self-cleansing anti-splash rims are recommended.

7. The drain from the fountain should be connected to a separate waste pipe.

8. The water supply pipe should be provided with an adjustable valve fitted with a loose key or an automatic valve permitting the regulation of the rate of flow of water to the fountain so that the valve manipulated by the users of the fountain will merely turn the water on or off.

9. The control valve should be operated preferably by knee or foot action to avoid possible hand contamination.

10. The height of the fountain at the drinking level should be such as to be most convenient to persons utilizing the fountain. The provision of several step-like elevations to the floor at fountains will permit children of various ages utilizing the fountain. Elevations may be difficult to provide, however, at fountains recessed in walls.

11. The rate of flow and the pressure should be such that the water will not splash over the bowl. It should be at a rate not less than ½ gallon per minute and at nozzle pressure not exceeding 5 pounds per square inch.

12. The waste opening and pipe should be of sufficient size to carry off the water promptly. The opening should be provided with a strainer.

Obviously, the control and supervision of public drinking fountains should be delegated to local health authorities. It is the committee's impression, however, that few local ordinances on this subject have been promulgated. In certain instances, however, boards of education have specified in their building standards what types of drinking fountains must be installed in approved school buildings. It is felt, therefore, that this committee might well prepare specifications for sanitary drinking fountains for the guidance of members of this Association.

The conclusions of the committee of the American Water Works Association given above indicate that the essential features of sanitary drinking fountains are sloping jets which are so located as to be above the level of the water draining from the bowls. Many of the so-called sanitary drinking fountains available at present do not fulfil these requirements. In fact, the vertical jet type fountain seems to be the most popular. It is necessary, therefore, that publicity be given to the essential features of design of these fixtures.

The use of sanitary drinking fountains involves several secondary problems, such as location, water supply, and cooling. It would seem a relatively simple matter to locate drinking fountains properly, and yet such fountains have been observed in toilet rooms, vestibules, baggage rooms, and isolated in improperly lighted hallways. It is not felt that the mere location of a drinking fountain is of great sanitary significance; yet it is apparent that the education of the public in matters of cleanliness and hygiene will be hindered by the inference drawn from observing such structures in toilet rooms or similar locations. Esthetic considerations must be considered likewise.

It goes without saying that the water obtainable through drinking fountains should be of satisfactory sanitary quality. The pressure of the supply is also of considerable importance, because if the pressure is insufficient the rate of flow of the water is too slow to produce the desired size jet, making it difficult to secure water. This deficiency may be caused by undue resistance to the flow of water by the jet and control valve of the structure, or to low pressure on the distribution system. If the pressure is too high, the jet is too strong and water is splashed over those using the fountain. If, on the other hand, the pressure is insufficient, the jet may not reach the proper height and there will be a tendency for those desiring water, especially children, to secure it by placing their hands or small utensils in the bowl of the fountain. Frequently valves are provided on fountains for adjusting

the rates of flow, to provide the desired size jet. Automatic pressure control valves are preferable, if not necessary, with slanting jet fountains, as the pressure of the water supply varies throughout the day.

Drinking fountains are also subject to the limitation imposed by the necessity of cooling a relatively large volume of water, because warm water is not attractive to the public. The quantity of water flowing through a drinking fountain is much in excess of that which would be used were individual drinking cups available, so obviously the amount of ice necessary to cool the water issuing from drinking fountains is greater than otherwise would be the case. It is felt that this feature is one of the salient reasons why drinking fountains are not so popular with the public as they were expected to be by those interested in providing sanitary means of securing potable water. Mechanical refrigerating equipment is available, however, for cooling the water. The cost of such installations is about twice that of equipment for cooling with ice. Many of these units, therefore, are being installed. Sulphur dioxide and other gases are being used as the refrigerating agents.

It should be emphasized that the design of this equipment should be such that the gas will not enter the water supply of fountains in case of leaks; otherwise sulphurous acid or other compounds would be formed in the water. Obviously, the fountains and refrigerating equipment should be designed and installed in such a manner that cross connections are not formed between the water supply and drainage systems.

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DISCUSSION

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ONE of the early studies demonstrating the transmission of communicable diseases by means of insanitary drinking fountains was undertaken by Pettibone, Bogart, and Clark, at the University of Wisconsin, in 1914.[1] They studied an epidemic of septic sore throat at this university which was quite definitely associated with certain drinking fountains then in use. As a result of their studies, they recommended the slanting stream type of fountain. During the year 1917,

investigations were conducted by the writer at the University of Minnesota, which showed that 80 per cent of the fountains examined at the university were infected with streptococci.[2] As a result of this investigation, a type of fountain was designed with the view of eliminating, as far as practicable, the dangers associated with the types then in use. Bacteriological results obtained after the installation of the new design showed that the desired results had been accomplished.

For a time it appeared that health officials were taking a keen interest in the drinking fountain problem, but for several years only a lukewarm interest has been taken in the situation. During the past two years, I have paid special attention to the drinking fountains located in public places in cities that I have had occasion to visit, throughout the country. I have been astounded at the number of apparently insanitary types of drinking fountains in nearly every section visited, including Minnesota.

I was very deeply impressed during the past year, while visiting a large public school, to see a long line of kindergarten children led to a drinking fountain of a most insanitary type. In this case, the fountain was of the vertical stream type, so designed and operated that it was practically necessary for each child to place his lips around the point at which the water emerged. To make the situation still worse the fountain was operated intermittently and after each operation the water receded into the nozzle carrying with it any droppings from the mouth of the consumer. This infected material remained there to be deposited in the mouth of the next consumer using the fountain. I counted a line of 25 kindergarten children at this fountain, each—so to speak—sucking the same metal bulb. I can scarcely imagine any more direct way of transmitting communicable diseases associated with discharges from the mouth.

The situation in this state became so apparent that on January 15, 1929, the Minnesota State Board of Health passed the following resolution which was sent to the public throughout the state:

WHEREAS, public drinking fountains have largely replaced the common drinking cup and are provided in a great many places accessible to the public, and

WHEREAS, investigations have shown that disease producing bacteria may be transmitted from one person to another through the use of improperly constructed or improperly operated drinking fountains, and

WHEREAS, the observations made by the State Board of Health have revealed the presence of insanitary types of drinking fountains in many public and semi-public places throughout the state, therefore, be it

RESOLVED, that the attention of the public be drawn to the fact that not all drinking fountains are satisfactory, and that to be sanitary, drinking fountains should conform with the following general requirements:

1. The jet of water emerging from the fountain should be slanting so that discharged water does not fall back onto the surface.

2. The orifice from which the water emerges should be protected in such a manner that it cannot be touched by the lips or be contaminated by droppings from the mouth or by splashings from the base beneath the orifice.

3. An adequate supply of pure water under sufficient pressure properly controlled should be provided in order to insure satisfactory operation of the fountain.

The board considers the situation to be serious and, after giving the public adequate time to consider the problem further, more positive action may be taken to remedy the condition.

When one stops to consider the number of different communicable diseases that are transmitted through discharges from the mouth and nose, it is easy to conceive that insanitary types of drinking fountains may become an appreciable factor in the transmission of the respiratory diseases.

The committee has made an excellent report, and I hope it will be instructed to continue its good work and to prepare a set of standard specifications for the construction and operation of sanitary drinking fountains.

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Milk-Borne Outbreaks of Disease in the United States and Canada in 1928

A TOTAL of 43 milk-borne epidemics involving 2,129 cases and 94 deaths were reported by state and provincial health officers in the year 1928. Twenty-four of these outbreaks were of typhoid fever, involving 408 cases with 41 deaths. Ten of the outbreaks were of scarlet fever, involving 407 cases with 5 deaths. There were 3 outbreaks of undulant fever, involving 29 cases with no deaths. The most serious outbreak was that of septic sore throat at Lee, Mass., involving 950 cases with 48 deaths.

The danger of typhoid carrier infection in relation to milk is shown in an outbreak of typhoid fever in San Francisco, involving 63 cases and 11 deaths, in which a carrier was employed at the capping and bottling machine at a pasteurization plant. The pasteurization of the milk supply was satisfactory, but the carrier evidently infected the milk when bottles were returned for refilling and capping. A typhoid outbreak in Sullivan County, N. Y., involved 7 cases and 2 deaths. A carrier responsible for the outbreak was found on investigation to have caused about 35 cases of typhoid fever over a period of 20 years. This particular carrier operated a store and a one-cow dairy and distributed raw milk. The outbreak at Rutland, Vt., involved 16 cases and 3 deaths. The typhoid carrier was found among the employees of the dairy on whose route the cases occurred. The carrier was a man 63 years of age, who had typhoid fever at the age of 15.—*Monthly Bull.*, Indiana State Board of Health, August, 1929, p. 122.

Research in Student Health

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THE field of student health offers opportunities for research found probably nowhere else in the realm of the medical sciences. This branch of medicine is comparatively new. The viewpoint offered is unique and is not to be found in the other branches of preventive or curative medicine. It has become a specialty in which are incorporated certain features from the field of clinical medicine, others from preventive medicine and public health, and still others which have been born in college and university departments of physical education.

Because it is new and because it has this background it opens up new avenues of approach to the solution of many health problems whose significance has not been appreciated in the past. In this new enterprise we find opportunities for the study and correlation of facts and sciences which have hitherto been valuable in their own sphere, but have lost much of their practical social value because there were no means of arriving at their full interpretation. Research in physical education, clinical medicine, and public health, is currently achieving fresh objectives. New avenues of social service are being rapidly opened. In the realm of science generally and especially in the field of the biological sciences, relationships are of greater significance than isolated factors. Progress is bound to be both stimulated, and more effectively directed, by the natural impact of one branch upon another. The essential unity of all problems relating to human health and discoveries growing out of their study finds full opportunity for expression in the work of the department of student health. Constructive ideas conceived and nurtured in one branch can be adopted and applied to the full measure of their potential usefulness in allied fields. Developments and discoveries in any direction can be adjusted to throw a broad as well as an intensive light. In the student health laboratory one may study the effects upon carefully selected and easily controllable material of propositions germinated in each of the sciences concerned with health. Here lies a field fertile in its possibilities for planning, administering, and testing in a practical way the most significant correlations. That it has long been neglected makes it all the richer in its potentialities.

In the field of student health we may promptly dismiss from our consciousness the inspiration to investigate merely to satisfy the desire for exploration. The million students who every year present themselves to us furnish invaluable material and tools for the working out of problems which *directly* affect their present and future health, and their usefulness to the world. The immediate and practical social value of research in student health is incalculable. Is it not significant to discover, for example, whether the students who have experienced a well rounded 4-year health program are more able to live well after leaving college than those not enjoying this phase of education? Have they cultivated a more scientific attitude toward disease? Storey[1] has contributed an outstanding monograph in this field in which he points out the opportunity the student health service has to produce graduates who will be characterized by "habits of periodic health examination" and by an "experienced discriminating judgment in the selection of scientific health advisers, services, and consultants." Diehl[2] has given an excellent summary of the research already done in this particular field and has proposed a most comprehensive program for future efforts. Our institutions of higher education have it in their power to send out 100,000 graduates annually, taking places of leadership in their various communities and in the nation, who could in one generation bring about the practical application of our knowledge of disease prevention and health conservation.

Certain researches may and should serve to stimulate a restudy of our convictions about the value of medical or surgical treatments which have hitherto held unassailable positions in medical practice. For example, Forsythe[3] concluded from his investigation of the incidence of acute disease in tonsillectomized and non-tonsillectomized students that: "There seems to be little if any significant difference between the health of students who came to the University of Michigan with or without having had the operation of tonsillectomy."

One difficult problem which should be worked out carefully is that of health appraisal. A system of evaluating physical defects, health habits, illness disability, and the individual's health status on an established uniform basis and of conferring health grades similar to our methods of awarding scholarship grades would be of great value in this work and would offer an excellent runway from which to take off for improvement in many phases of the work as well as be a stimulus to the student to better his condition. Standards of this kind would stimulate studies which involve comparisons between health conditions of a general population group and those on the campus. Such standards are indispensable in properly evaluating the results of procedures

currently used in health conservation. Smiley[4] at Cornell University has attacked the subject and has worked out a useful basis, a modification of which has already been utilized in industrial medicine by Sappington.[5]

PREVENTION OF ACUTE DISEASE

There are a million students daily bringing to our door ailments which previously have never come to the attention of anyone who was capable of, or interested in, recording and studying them systematically. The average patient consults the physician only when symptoms have advanced to such a state that relief is demanded. The student health service invites the patient to seek scientific medical advice at the earliest suggestion of variation from the normal. This is the stage of disease, in the large, never before presented to the physician for study. These are the physical conditions which offer a mass of data crying for interpretation. In this stage of disease prevention can be practiced in a telling way. Here we have untold opportunity to offer humanity proven theories regarding health conservation which will be of large social value.

PREVENTION OF DEGENERATIVE DISEASES

Another challenge which faces those responsible for the health of youth lies in the increase of the insidiously developing chronic diseases such as cancer, arteriosclerosis, heart disease and diabetes. Although the life span of the infant has increased 10 years since 1900, the expectancy of the middle aged person shows no significant improvement. A *larger* percentage of the population each year is reaching the age period when the chronic degenerative diseases demand their toll. Every year chronic diseases of the heart, kidney, and arteries select a distressingly large proportion of their victims from those in the prime of life, and we are practically helpless in preventing these disasters. But there are many reasons to make us believe that the infections of youth, and the health habits established during college life, may very well be contributing factors in such deaths, and prevention of these pathologic tendencies may be possible in the college age period. Can we not determine what significance should be attached to the many transient albuminurias we find? What of the many transient hypertensions or glycosurias or the psychoneuroses? Some of these questions require years for solution, but if a beginning be made in the college age period with careful and complete records of even the minor ailments, in most of our institutions it will be possible through the alumni organizations to obtain fairly complete histories of major health data regarding a large percentage of graduates.

Correlation of these data with health records of the students for four years in college will enable us certainly to solve some of the problems mentioned above.

MENTAL HYGIENE

Only comparatively recently have functional mental disorders been studied scientifically and we are beginning to realize how close is the relationship between emotional imbalance and failure in life. Jastrow[8] says, "This is the psychoneurotic age. As the result of our strenuous order of living the nervous and mental disorders outnumber all other forms of ailments. One dismal prophecy announces that, if the increase of psychoneuroses and mental disorders continues for another generation, there will be about enough mentally fit individuals in the community to take care of the mentally unfit and the human race will have no other occupation."

A distressingly large percentage of our graduates are victims of emotional imbalance which condemns them to a life too full of misery. When faced with the challenge of adjusting themselves to the baffling array of demands set by our modern mode of life they develop a pathologic behavior which precludes the possibility of a wholly successful outcome in their pitiful struggle. They become helpless dependents, incapacitated with periodic aches and paralyzed with fears. Is it not our responsibility to learn how to cultivate in our students an emotional control which will enable them to meet the trying situations which life presents? The youthful student steps from his sheltered home into college life with its scholastic and social demands immediately imposed upon him in a wholly unfamiliar environment. The customary supports have been left behind. Right here we are presented with a unique opportunity to study the outcropping and development of previously unsuspected emotional stigmata. He appears at the health service with a complaint of incapacitating fatigue; or in an attempted escape from reality he may develop a digestive disorder which drives him to bed in the infirmary. We shall not trace him through his sombre future, but stop to consider the challenge he offers us for the solution of his dilemma, which is the dilemma of thousands. It is a lamentable fact that up to the present time absolutely no effective program for rehabilitating those afflicted with functional mental disorders has been presented. Occasionally we achieve what seems to be a remarkable cure, but these are the exceptions rather than the rule. Can we not make more accurate measurements of the emotional life of the individual? Can we not measure objectively, with the help of the psychiatrist, the psychologist, the personnel

officer, the student's emotional life, his ability to adapt himself to his environment, his variation from what might be established as normal? Can we not then train his emotions?

HEALTH AND ENVIRONMENTAL FACTORS

University and college life imposes on the individual a unique set of conditions. These conditions pertinently affect the health of the student. There is no other large group of people who can be so well moulded into an experiment as the average college student body. They are intelligent and coöperative. Our observations may be carefully made and accurately checked. With the inauguration of the personnel work in our colleges we have placed at our disposal an array of pertinent facts concerning each individual never before assembled. The comparison of the health status of a group exhibiting a certain set of characteristics or subjected to certain environmental factors either before or during the college years with the health status of another selected group will reveal conclusions of widespread applicability in our efforts at health conservation. It should be remembered that the mere realization of the relationship between incidence of tuberculosis and financial status of the patient was one of the most important factors causing the rapidly declining death rate of that disease witnessed during the past few years.

At Oberlin College the writer[7] investigated the incidence of illness among self-supporting and financially independent students, and found a significant difference in the amount. The students working their way suffered an incidence approximately 30 per cent greater than their financially carefree colleagues. Many other correlations of this sort may easily be worked out and will usually lead to worthwhile conclusions.

NUTRITION

The student health service is in a strategic position to undertake systematic and practical experiments in the field of nutrition. Emerson[8] has demonstrated a relationship between scholarship and the state of nutrition. There is general agreement that a close relationship exists between nutrition and general bodily resistance to disease. It should be comparatively easy to institute experiments which could be well controlled and carefully checked in a few of our institutions, the results of which should perhaps emphasize distinct advantages of a particular diet in its ability to stimulate and sustain hard mental work. Ever since the classic studies of Chittenden and his coworkers, we have been inclined to believe that a comparatively low protein allowance may be tolerated without the development of any signs of

malnutrition, or indications of any decrease in well-being. Many workers are beginning to doubt the validity of this teaching.[9] We are not at all convinced that the commonly recommended diet of our college boarding halls contains proteins, adequate either in quantity or quality.

EPIDEMIOLOGY

The periodic dismissal of a large number of students at vacation time, and their reassemblage from all parts of the country into a set environment several times a year, places under our immediate control factors which are significant in determining the nature of epidemics. In this situation elements such as virulence of virus, duration and completeness of immunity, intimacy and extent of contact, which are determining factors in disease spread, are forced to the surface where they may be isolated and studied as distinct units.

To mention but one of our problems in epidemiology, the common cold, the most prevalent disease with which we deal, and the greatest time-waster for students, has not yet been brought under control. Although we have not determined the cause, we are convinced that its contagiousness is its strongest offensive weapon. Careful researches into this phase of epidemiology will yield rich rewards.

SUMMARY

Student health is a new science. In this field is offered an opportunity to study disease and health from a new vantage point, and an opportunity to correlate effectively health data derived from various sources. In the health service are assembled data regarding the stage of disease never before systematically studied on a large scale. Unique opportunities for research are offered in the field of health appraisal, disease prevention, nutrition, mental hygiene, and epidemiology the results of which will be of immediate practical social value.

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EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

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THE FIFTY-EIGHTH ANNUAL MEETING

THE meeting in Minneapolis was a success, though the attendance was not up to what was hoped for and expected. There were 196 papers presented, many of which were of high quality. While no startling discoveries were announced, the several papers on the streptococcus and its relation to septic sore throat, scarlet fever, and erysipelas, which were read before the Laboratory Section, had especial value, looking toward the clearing up of the many difficulties which confront the bacteriologist in his study of this great enemy of the animal kingdom. Though oral hygiene has attracted much attention during the past few years, only one paper on the subject appeared on the program, though the Child Hygiene Section had nine sessions, alone or in connection with kindred organizations.

All the other sections of the Association were well represented, and many contributions of practical as well as scientific value were presented. The Public Health Education Section had an especially full program.

Among the foreign representatives attending the meeting were: Dr. Wu Lien Teh, Chief Consultant of the Minister of Health of China, and Director of Manchuria Plague Prevention Service, who delivered a paper before the Epidemiology Section entitled "Epidemic of Plague in Manchuria"; Dr. Jacobo Fajardo, Director of the Philippine Health Service, who gave a brief talk at the Health Officers Section dinner regarding advances in health conditions in the Philippines since the pioneer work of Dr. Heiser; and S. W. Tay, Chief Engineer of the Hawaii Health Department, who was the official representative for the Hawaiian Government.

Perhaps the chief interest in the session for members of the Asso-

ciation lay in the adoption of the amendments to the Constitution, the substance of which has already been published in the JOURNAL. These make for continuity of effort, and increase the democratic character of representation and selection of officers. For the first time a President and a President-elect were chosen. The latter will take office at the close of the annual meeting in 1930, after a year of close connection with the affairs of the Association.

The retiring President, George W. Fuller, gave much time to the reorganization plan, and was directly responsible for many economies as well as increased efficiency of organization, the gratifying result being that the Association is in a better financial condition than at any time in its history, and there is every prospect that it will continue in this favorable position.

All publications of the Association, including the JOURNAL, were put under a special committee to be selected by the Executive Board. Heretofore, the JOURNAL, and all other publications, have been directly under the Executive Board.

The citizens of Minneapolis as well as the State of Minnesota showed every hospitality possible. The arrangements were excellent, the Chairman of the local Committee being also the Mayor, who presented to President Fuller a key to the city, which, as he said, would open the doors of any places into which we wished to go, and also the doors of any other places into which we had strayed and might wish to get out of. The thanks of the Association are due to all who took part in making the meeting a success, and especially to Dr. R. O. Beard, who took on his shoulders much of the active work connected with preparing for the meeting.

DIPHTHERIA CARRIERS

THE health officer has no more puzzling problem than supposedly "healthy" carriers of pathogenic organisms. These people are unfortunates. They have committed no offense, yet are a menace to the community in which they live and move.

For several years, an intensive study of diphtheria carriers has been going on in London, reports on which have been published from time to time.[1] The carriers from a number of hospitals devoted to the care of infectious diseases have been assembled in one institution for the purpose of this investigation. A general conclusion is that pathological conditions, or physical abnormalities in the upper respiratory tract, are the chief predisposing factors in causing or maintaining the carrier state.

Only those who harbored virulent diphtheria bacilli for at least 12 weeks were considered chronic carriers. The condition was considered as cured when 6 consecutive negative cultures taken at intervals of 1 week were obtained. The necessity of this prolonged examination was shown in a number of cases, which after giving negative results for even as long as 5 weeks, became positive, and remained so for long periods.

The throat carriers were those most easily cured. Of 60 cases treated by removal of tonsils and adenoids, 17 harbored the organisms in the throat only, and of these, 16 were cured. Of the remaining 43, in whom the organisms were harbored in the nose or ear also, only 19 were cured. The tonsil most apt to harbor the diphtheria organism is small, ragged, septic, and with deep crypts. It was found that by clinical examination the tonsils which on removal would give cultures of the diphtheria germ could be foretold. The experience gained from this study indicates that the best time for operation is from 6 to 8 weeks after the infection—earlier than usually advised.

Nasal carriers, who are difficult to cure, were treated by autogenous vaccines made from the diphtheria organism and complicating bacteria. In 3 cases, only the Klebs-Loeffler bacillus was used. Of 38 cases, 16 were cured in from 1 to 9 weeks, the others remaining positive, though some showed improvement. The staphylococcus was the most resistant and persistent organism. An alkaline nasal douche containing bicarbonate, chloride and biborate of sodium, approximately 2 grains of each to an ounce of water, had a very satisfactory effect, the mucous membrane becoming healthy, and cultures negative. Of 55 cases treated, 27 cleared up in from 1 to 7 weeks, 16 after one or more relapses, and in 12 the treatment failed. Spraying instead of douching was unsatisfactory.

In 2 out of 3 refractory cases, the antrum of Highmore was opened, and from 2, diphtheria bacilli were isolated. Removal of the tonsils and adenoids in 16 nasal carriers gave cures in only 3.

The ear carriers were the most difficult to treat, and no satisfactory procedure was discovered, though vaccines, removal of the tonsils and adenoids, mastoidectomy, and nasal douching were tried. In many cases of supposed ear carriers, the organisms were found to be saccharose-fermenting diphtheroids.

The health of carriers was usually found to be extremely good, and seemed to have little or nothing to do with the condition or its persistence. The most important carrier is the one who harbors the organism in the nose.

This study emphasizes the common mistake of speaking of

" healthy carriers." The late Dr. Nichols[2] laid stress on the fact that the carrier condition generally indicated an incomplete cure, with persistence of pathological tissue, which is borne out by the observations here recorded.

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THE AWARD OF THE SEDGWICK MEMORIAL COMMITTEE

ACCORDING to the announcement made in the JOURNAL several months ago, the committee met at Minneapolis and considered the nominations which had been made for the Sedgwick Memorial Medal.

It was unanimously awarded to Charles Value Chapin, M.D., who has been the honored Superintendent of Health of Providence, R. I., for many years, and to whom all health officers look for enlightenment in health administration.

That the committee made a wise choice was proved by the universal approbation which its action received. The announcement was greeted with applause, and it can be said with certainty that throughout the land there will be no heartburning and no criticism of the committee's decision.

It was a matter of regret to everyone that Dr. Chapin's health prevented him from attending the meeting. The President with such members of the committee, and others whom he may select will make formal presentation of the medal at some time suitable to Dr. Chapin. We only wish that we could add to this demonstration by having every member of the Association present to assist in doing honor to Dr. Chapin on this occasion.

ASSOCIATION NEWS

NEW OFFICERS

1929–1930

President—A. J. Chesley, M.D.
President-Elect—Hugh S. Cumming, M.D.
First Vice-President—Louis I. Harris, M.D.
Second Vice-President—W. J. Bell, M.B.
Third Vice-President—F. E. Harrington, M.D.
Executive Secretary—Homer N. Calver.
Treasurer—Louis I. Dublin, Ph.D.
Chairman of Executive Board—W. S. Rankin, M.D.

EXECUTIVE BOARD

W. S. Rankin, M.D., Chairman

A. J. Chesley, M.D.
Hugh S. Cumming, M.D.
Louis I. Dublin, Ph.D.
W. C. Hassler, M.D.
Haven Emerson, M.D.
E. L. Bishop, M.D.
Matthias Nicoll, Jr., M.D.
Henry F. Vaughan, D.P.H.

Newly elected Governing Councilors with terms expiring in 1932

A. J. Douglas, M.D.
Louis I. Dublin, Ph.D.
John A. Ferrell, M.D.
A. W. Freeman, M.D.
W. H. Frost, M.D.
J. C. Geiger.
Ira V. Hiscock.
A. J. McLaughlin, M.D.
R. G. Perkins, M.D.
G. C. Ruhland, M.D.

The Fifty-ninth Annual Meeting will be held in Fort Worth, Tex.

RESOLUTIONS

Presented by the Committee on Resolutions, William C. Hassler, M.D., *Chairman*, and adopted at the Fifty-eighth Annual Meeting at Minneapolis, Minn., October 3, 1929.

1. AMERICAN INDIANS

WHEREAS, the American Indians are the most neglected racial group in the United States from the point of view of health protection, and

WHEREAS, Secretary of the Interior, Dr. Ray Lyman Wilbur, has requested appropriations adequate to provide for a reasonable degree of preventive and curative medical and nursing services for the Indian wards of the Federal Government, and sufficient to bring to an end the chronic undernourishment of many children in the Indian boarding schools, be it

RESOLVED, that the American Public Health Association endorses his request for appropriations for these purposes and respectfully urges upon the President of the United States, and upon the Committees on Appropriation of the Senate and the House of Representatives

of the Congress, the necessity of prompt and liberal provision of funds to prevent the further spread of preventable, and particularly of communicable diseases among the Indians, and to provide suitable and sufficient food for the Indian children.

II. TOBACCO AND TOBACCO PRODUCTS

Your Committee on Resolutions begs to present to you for your earnest consideration an endorsement of the bill recently introduced into the Senate of the United States by the Honorable Reed Smoot providing (a) For the inclusion of tobacco and tobacco products within the scope of the food and drugs acts. (b) For the amendment of the food and drugs act so that claims made for food and drug products in any advertising medium subject to interstate commerce control should be under the same strict regulation now applied to labels or other descriptive matter on, within, or around the container in which the products are packed.

III. WILLIAM H. DAVIS

WHEREAS, the death of Dr. William H. Davis, Chief Statistician for Vital Statistics of the U. S. Bureau of the Census, on January 8, 1929, deprived the American Public Health Association and its Section on Vital Statistics of a valued and respected member, therefore be it

RESOLVED, that the Association and the Section on Vital Statistics record their admiration for, and appreciation of the services of Dr. Davis, and their deep regret at the loss of one of the most active and sincere workers in his branch of public health work, and enter on the minutes of this meeting the following brief biographical note:

William Horace Davis was born at Holyoke, Mass., July 21, 1871. He began his higher education at Amherst and from there entered Harvard where he was graduated with the degree of Bachelor of Arts in 1893 and the degree of Doctor of Medicine in 1897. He was resident physician at Massachusetts General Hospital for one year, following which he studied in Vienna and other places in Europe.

In 1900 he began the general practice of medicine and continued until 1908 when he accepted the position of Vital Statistician for the City of Boston, in which capacity he served until 1916 when he assumed the position of Chief Statistician for Vital Statistics in the U. S. Bureau of the Census.

When he entered the U. S. Bureau of the Census the birth registration area consisted of 10 states and the District of Columbia. Due to his intensive and well directed efforts this area increased to such an extent that at the time of his death it included 45 states, the District of Columbia and the Virgin Islands. During the same period the death registration area increased from 26 to 45 states and from 70.2 per cent to 95.5 per cent of the total population.

Dr. Davis was recognized by his associates in American vital statistics as one of the foremost among those who have devoted their lives to the improvement of this important branch of statistical science. He was known internationally in his profession, and at the Conference for the third revision of the International List of Causes of Death at Paris served as Vice-Chairman, and was instrumental in bringing about many improvements in the list.

For many years he had taken an active part in the affairs of the American Public Health Association, especially in the Vital Statistics Section. He served as a Vice-President of the Association in 1923–1924, Chairman of the Vital Statistics Section in 1919–1920, and served as both Chairman and as an active member of important committees, both of the Association and the Vital Statistics Section.

Those who knew him will remember Dr. Davis as a modest, kind-hearted, conscientious, and lovable friend and colleague and as one who adhered to the principles of honesty and fairness at all times.

It is recommended that a copy of this resolution, together with the biographical note, be sent to the widow, Mrs. Mabel Johnson Davis, with an expression of the Association's sympathy.

IV. IN MEMORIAM

Your Committee on Resolutions respectfully brings to the attention of the members of the American Public Health

Association the following list of the deceased members and Fellows.

They fought as brave soldiers.
They have now been discharged.
Their warfare has ended,
And their treasures enlarged.

The memory of our association with them will linger and their names be inscribed on our rolls forever.

C. B. Ball,
Chicago, Ill.
Charles W. Bartlett, M.D.,
Tampa, Fla.
Fred Berry,
Columbus, O.
Robert M. Boyd, M.D.,
Ft. William, Ont.
Isaac W. Brewer, M.D.,
Bath, N. Y.
Dr. R. O. Burns,
Pittsburgh, Pa.
A. M. Burt, M.D.,
Ballston Lake, N. Y.
R. S. Cooley, M.D.,
Cleveland, O.
William H. Davis, M.D.,
Washington, D. C.
George A. Dickinson,
Port Hope, Ont.
M. R. Donovan, M.D.,
Lynn, Mass.
William J. Fleming, M.D.,
Troy, N. Y.
Edward G. Folsom,
Mt. Clemens, Mich.
F. B. Forbes,
Boston, Mass.
Alonzo B. Foster, M.D.,
Fonda, N. Y.
Richard A. Gantz,
Muncie, Ind.
Samuel H. Gilliland, M.D.,
Marietta, Pa.
Joseph Goldberger, M.D.,
Washington, D. C.
John L. Gray, M.D.,
Caldwell, O.
Marinus L. Holm, M.D.,
Lansing, Mich.
Ruth M. Hutton,
Toronto, Can.
George T. Johnson, M.D.,
Terre Haute, Ind.
L. W. Leiter, D.Sc.,
Baltimore, Md.
B. F. Lowry, M.D.,
Cleveland, O.
C. G. McLaughlin, M.D.,
Dunkirk, O.
Edith H. Matzke, M.D., Dr.P.H.,
San Francisco, Calif.
John B. Mitchell,
Chevy Chase, Md.
D. E. Musgrave, M.D.,
Barboursville, W. Va.
Lockhart Nelson,
Hillsboro, O.
Ira W. Pickett,
Cristobal, C. Z.
Harry Rand, M.D.,
Chicago, Ill.
Charles A. L. Reed, M.D.,
Cincinnati, O.
Chandler P. Robbins, M.D.,
Columbus, O.
E. G. Schroeder, M.D.,
Bethesda, Md.
Horatio Z. Silver, M.D.,
Eaton, O.
Carl Speer, Jr., B.S., M.S.,
Baltimore, Md.
Thomas P. Walsh, M.D.,
Middletown, Conn.
Nannie L. Winn, M.D.,
Nashville, Tenn.
Edward A. Woods,
Pittsburgh, Pa.

V. THANKS TO MINNEAPOLIS

The Resolutions Committee recommends that this Association give a hearty vote of thanks and appreciation to the citizens of Minneapolis for the generous hospitality extended to it through his Honor William F. Kunze, Mayor and Chairman of the Local Committee on Arrangements, Dr. R. O. Beard, Secretary of the Local Committee, and Dr. Francis E. Harrington, Chairman of the Entertainment Committee, and for the excellent arrangements for the Convention in its new auditorium for the meetings of the 58th Annual Convention. It is further resolved that this Association commends the Educational Exhibit and expresses its appreciation and thanks to the Local Committee who were responsible for the same.

VI. SCHOOL PHYSICIANS

Your Resolutions Committee recommends the endorsement of the following regarding a higher education require-

ment and a higher salary rating for school physicians:

WHEREAS, school physicians as a class have not heretofore been adequately prepared for the work which our complex educational systems now demand; and

WHEREAS, school physicians have not heretofore been paid a salary sufficient to justify this additional training and to enable them to devote their full time and best efforts to this work; and

WHEREAS, it has become necessary to take definite steps to improve this situation; therefore be it

RESOLVED, that the American Public Health Association does recommend consideration of and action upon, by the various states, the following minimum requirements for school physician applicants hereafter applying:

1. Graduation from an acceptable medical school, one year of acceptable internship and a license to practice medicine in the state.

2. Six semester hours of graduate training in medical subjects relating to school health work.

3. Six semester hours in a school of education of work embodying the principles of health education and the organization and administration of same.

4. This twelve hours of graduate work must be completed within three years after certification by the state board of education.

And that they further recommend:

1. The establishment of a salary rating equivalent to that now granted the high school principals in their respective localities.

2. That this salary be subject to automatic increase according to length of service.

3. And that it be subject also to an increase commensurate with educational merit and progressive professional development.

This resolution has been adopted by the American Association of School Physicians.

A. J. CHESLEY, M.D.

ALBERT J. CHESLEY, M.D., PRESIDENT

DR. Chesley, Secretary and Executive Officer of Minnesota State Department of Health, was elected President of the American Public Health Association at the Minneapolis meeting, October 3, 1929—the fifty-eighth in the long line of Presidents beginning with Stephen Smith, who served in that capacity during the period 1872–1874.

Dr. Chesley was born in Minneapolis, Minn., September 12, 1877. While still a young man he began his public health work—first as nurse in the Minnesota Soldiers Home Hospital; then, after service as a private in Company F, 13th Minnesota Volunteer Infantry, 1898–1899, as nurse in the Minneapolis Smallpox Hospital for 6 months during the epidemic of 1900. In 1901 he entered the medical school of the University of Minnesota; and upon graduation was appointed bacteriologist under Dr. F.

F. Wesbrook, Director of the State Board of Health Laboratories of Minnesota. In 1919, he became epidemiologist in the Division of Epidemiology, and in 1912 director of this division; in 1914 he became director of the Division of Preventable Diseases.

At the request of the American Red Cross Headquarters of Paris, Dr. Chesley was granted leave of absence for overseas duty from May, 1918, until October, 1920.

He was public health expert to the A. R. C. Commission to France, and in 1919 was sent to Poland to work under the Commissioner to Poland, later himself becoming Commissioner to Poland.

At present Dr. Chesley is secretary-treasurer of the Conference of State and Provincial Health Authorities of North America and a member of the Board of Directors of the National Society for the Prevention of Blindness.

SEDGWICK MEMORIAL MEDAL AWARD

THE first award of the Sedgwick Memorial Medal has been made to Charles Value Chapin, M.D., Superintendent of Health of Providence, R. I. This medal, established by subscription from friends and former students of the late Professor William T. Sedgwick, President of the American Public Health Association in 1915, is awarded for distinguished service in public health.

Dr. Chapin was President of the American Public Health Association in 1927, and is internationally famous for his work in the control of communicable diseases. Announcement of the award was made at the General Session of the Fifty-eighth Annual Meeting of the American Public Health Association in Minneapolis.

The formal presentation of the medal will take place on a later, appropriate occasion.

CHARLES V. CHAPIN, M.D.

NEW MEMBERS

Ida M. Alexander, M.D., A.B., Lansing, Mich., Lecturer, Bureau of Child Hygiene, State Department of Health

Walter C. Allen, M.D., Rochester, N. Y., Previously Assistant Surgeon, U. S. Public Health Service; no official public health position at present

Gladyce L. Badger, San Francisco, Calif., Nursing Field Representative, Pacific Branch Office, Red Cross

George H. Becker, M.D., A.B., San Francisco, Calif., Epidemiologist, Department of Health

Maharaj Mom Chow Bichitr, Bangkok, Siam (Assoc.)

Waldimar T. Browne, M.D., Ph.D., New Orleans, La., Assistant Health Officer

Laura A. Cauble, New York, N. Y., Chairman, National Conference Board on Sanitation

Lane B. Cooke, M.D., Dallas, Tex., Director of Public Health

Hulda A. Bieri Cron, Evansville, Ind., Director, Evansville Public Health Nursing Association and Health Center

Laurence A. Cushman, M.D., B.S., West Hartford, Conn., Health Officer and School Physician

James E. Davey, M.B., Hamilton, Ont., Chief School Medical Officer

Florence Erna, R.N., Martinez, Calif., Public Health Nurse

Laurence F. Foster, Ph.D., Berkeley, Calif., Chairman, School Health Committee

William J. French, M.D., New York, N. Y., Director, Division of Public Health, Commonwealth Fund

Fern A. Goulding, Ames, Ia., Instructor of Hygiene, Iowa State College

Robert Graham, D.V.M., Urbana, Ill., Chief, Division of Animal Pathology and Hygiene, University of Illinois

Allen C. Hutcheson, M.D., Houston, Tex., Health Officer

Mrs. Ruth S. Kase, Salem, O., Nurse, Board of Education

Homer R. Keyes, M.D., Los Angeles, Calif., Hygiene Physician, Department of Health

S. Adolphus Knopf, M.D., B.S., B.A., New York, N. Y., Consulting Physician, New York Department of Health

Dr. George W. LaBrier, Edinburg, Tex. (Assoc.)

Cassius T. Lesan, M.D., Mount Ayr, Ia., Member Iowa State Board of Health

Ferdinand McKeige, Brooklyn, N. Y. (Assoc.)

Ella E. McNeil, R.N., Philadelphia, Pa., Director of Health and Nursing, S.E. Pennsylvania Chapter, American Red Cross

Ethel M. Mealey, A.M., New York, N. Y., Staff Associate, Division of Health Education, American Child Health Association

Jerome Meyers, M.D., New York, N. Y., Medical Industrial Inspector, Department of Health

Luella Olson, R.N., Jefferson City, Mo., School Nurse

Mabel M. Oskins, R.N., Vincennes, Ind., Visiting Nurse

His Royal Highness Prince Paribatra of Nagara Svarga, Bangkok, Siam (Assoc.)

Peter E. Peterson, Woodbridge, N. J., Health Officer

Paul S. Prickett, Ph.D., Evansville, Ind., Chief Bacteriologist, Mead Johnson & Co.

Robert E. Rhyne, M.D., Gastonia, N. C., Gaston County Health Officer

Sylvio Roch, M.D., D.P.H., Montreal, Can., Director of Public Health

Elbridge Sibley, M.A., Nashville, Tenn., Statistician, State Department of Public Health

Delight Stone, San Antonio, Tex., Director, Public Health Nursing

Ruth Tunnicliff, M.D., Chicago, Ill., Research Worker, John McCormick Institute for Infectious Diseases

J. C. Whitacre, M.D., St. Paul, Minn. (Assoc.)

Dorothy G. Wiehl, M.A., New York, N. Y., Assistant Director of Research, Milbank Memorial Fund

DECEASED MEMBERS

William H. Carmault, M.D., New Haven, Conn., Elected Member 1927

John W. Plant, M.D., Groton, N. Y., Elected Member 1917

BIBLIOGRAPHY ON INDUSTRIAL FATIGUE

A number of copies of the *Bibliography on Industrial Fatigue* are available in the Association Office. This is a supplement to Dr. Eugene Lyman Fisk's *Report* as Chairman of the Committee on Industrial Fatigue, which was presented at Third Session of the Industrial Hygiene Section in Minneapolis at the Fifty-eighth Annual Meeting of the A. P. H. A.

PUBLIC HEALTH ADMINISTRATION

HENRY F. VAUGHAN, D. P. H.

The Effect of Closing and Fumigating Schools—The fallacy of closing and fumigating schools in attempting to control outbreaks of disease has been given considerable publicity in Pennsylvania. Definite information on how to control diseases in school by modern, effective methods has been described in *Pennsylvania's Health* published bimonthly by the Pennsylvania Department of Health, in *Hygeia* (April, 1929) and in the *Pennsylvania Medical Journal*, and in the *Pennsylvania School Journal*. Through these practically every physician, health officer, school principal and teacher is reached. But those who most need instruction do not read these articles, and in spite of all the appeals some local school or health officials order the closure and fumigation of schools. The desk of the writer receives from the newspaper clipping bureau notices of all schools which have been closed. No other report of such action by school boards is made to state officials.

Whenever it becomes known that a school has been closed because of contagious disease the local authorities are requested by the Department of Health to open the school immediately; institute daily examination of all involved classes at once and at the end of the incubation period; to exclude all suspects, to have all suspicious absentees followed and to report and to have quarantined all cases; and to abandon all fumigation and not to destroy any books.

The results of the closure and fumigation of schools are exactly what would be expected by public health authorities. Closing schools scatters the disease and fumigation does not control the infection. In 22 schools which depended upon fumigation only to stamp out their contagious diseases there was a total of 171 cases within a month before and just 300 within a month following the closure and fumigation. Fourteen schools attempted to check scarlet fever outbreaks with formaldehyde. Within a month before its use they had 91 cases of scarlet fever, and during the month following the fumigation 123 cases. Another rural school not included in the above summaries developed 4 cases of scarlet fever, closed and fumigated; then 4 more cases appeared, the school was again closed and fumigated; 7 more cases appeared and the school was again closed and fumigated, after which 23 more cases of scarlet fever developed. At that time the state first heard of the conditions; half of the cases had not been reported. The school principal wrote that " the school was closed January 21, February 4 and February 18 when the schoolrooms and halls were thoroughly wiped with a strong solution of Blank's disinfectant and then tightly closed and Blank's high power formaldehyde candles burned in them." The rooms and halls were well sprayed each evening after the last session with a strong solution of a much-advertised antiseptic. The state epidemiologist quickly located 3 children with desquamating hands and the outbreak ceased.

Other diseases gave corresponding results when closure and fumigation were depended upon rather than personal examination of the children. Two schools with German measles had 32 cases before and 96 cases within a month after fumigating. Another school had 19

cases of measles before, and 30 after fumigating the entire building. Two with mumps had 13 cases before and 12 after closing. Another rural school used the same methods with diphtheria and had 3 cases before and 14 within a month after fumigating the building. A rural school in Bradford County with a few cases of measles closed, against advice, and the disease quickly spread to 2 other rural schools in an adjoining township, and when they closed, the infection quickly spread over the entire county.—Harold B. Wood, M.D., Epidemiologist, Pennsylvania Department of Health.

Review of Health Conditions in Syracuse—The Metropolitan Life Insurance Company has recently published for the General Federation of Women's Clubs a review of health conditions in Syracuse, N. Y., and a statement of the needs of that community. The appropriation of the department of health for the year 1927 was $1.28 per capita. This sum was further increased by 40c per capita from contributions of the Milbank Memorial Fund and the Budget of the Department of Public Instruction.

A timely and extremely readable résumé of the health work in Syracuse for 1928 will be found in the last annual report of the Milbank Memorial Fund.

Diphtheria Prevention in Philadelphia—The September issue of the *Monthly Bulletin* of the Philadelphia Department of Public Health contains the complete announcement of the second annual diphtheria prevention campaign now being inaugurated in that city. Included in the report are reproductions of cards and forms used for educational purposes.

LABORATORY

C. C. YOUNG, D. P. H.

AN OUTBREAK OF BOTULISM FROM HOME-CANNED BEETS

WILLIAM LEVIN, DR. P. H., FELLOW A. P. H. A.

Director, State Hygienic Laboratory, Portland, Ore.

ON THE night of March 8, 1929, Mr. I. C. G., aged 51; Mrs. I. C. G., aged 37; Mr. P. A. S., aged 50; and Mrs. P. A. S., aged 55; ate a meal at the home of I. C. G., The Dalles, Ore. At this meal were served meat loaf, mashed potatoes, lettuce salad with mayonnaise dressing, vinegar beets, bread and butter, and blackberry pie. Mrs. I. C. G. also ate some Jello.

About 16 hours later Mr. G. complained of dizziness and nausea. He vomited. Disturbance of vision became marked. Diplopia and paralysis of the tongue and muscles of the pharynx set in. Constipation was marked. He was first seen by Dr. Fred F. Thompson, The Dalles, on March 11, and he died on the same day. All the other persons who ate at the meal had eye symptoms, nausea, and vomiting, but recovered.

Of the foods eaten at the meal the

meat loaf (beef sausage) was bought at the family butcher shop, and had been baked sufficiently long enough to rule out bacterial infection. Mrs. G. stated that the loaf was off-taste. Other persons, however, had bought and eaten of the same beef sausage, and no cases of infection or poisoning had occurred. The beets were the only other food which could be suspected.

Mrs. G. had opened a quart jar of home-canned beets on March 8, and after pouring off about half of the liquid, had replaced it with vinegar. She stated that she detected a slight odor to the beets, and this was corroborated by her husband. Neither, however, thought much of it, and they ate of the beets at both the noon and evening meals. The beets had been canned by a neighbor late in the summer of 1928. They had been subjected to 3 hours of boiling in a kettle closed at the top, but not under pressure.

A portion of the suspected beets was recovered for examination. On opening the jar a distinct putrefactive odor could be noticed in spite of the rather marked vinegar odor accompanying it. Several of the beets were slightly soft, but in appearance were in no way abnormal. Another jar of beets obtained from the neighbor who had canned the beets was found to be normal in all respects.

One c.c. of the beet juice was fed to a guinea pig. Death occurred in 12 hours. Another guinea pig was fed with about 2 gm. of solid beet; death occurred in a little over 24 hours. Beef digest broth cultures were made from both the juice and solid beets. *Cl. botulinus* was obtained after 5 days' incubation from the juice culture only. (Through the kindness of Dr. Karl F. Meyer, University of California, the organism was identified as *Cl. botulinus*, type A.)

It is interesting to note that a hen fed with 3 to 5 gm. of the solid beet showed practically no symptoms of poisoning. Five c.c. of the beet juice fed the same hen about a week later also had no effect on her. Presumably she had developed sufficient antitoxin to protect her against a toxic dose. That the strain of *Cl. botulinus* present in the toxic beets was not a powerful toxin producer was evident, since there was only 1 fatality among the 4 cases, and it did not produce toxic symptoms in the hen. The patient who died had previously been under a physician's care for heart trouble.

It is doubtful whether the vinegar had any influence upon the toxicity of the beet or its juice, except in so far as it acted as a diluent. In an outbreak of botulism occurring at Albany, Ore., in 1924,[1] 12 persons, ranging in age from 18 months to 70 years, partook of a bean salad, and all 12 died. The beans were home-canned and were served with vinegar, cream and sugar.

Cl. botulinus is found in many of the soils of the Pacific Coast states. The spores of *Cl. botulinus* have been found in 31 per cent of the soils examined from Oregon, 80 per cent from Washington, and 29 per cent from California.

The outbreak at The Dalles is the seventh occurring in Oregon. Altogether there have been 21 cases and 17 deaths. All were caused by home-canned foods. Four outbreaks were traced to string beans; 1 to corn; 1 to turnips; and 1 to beets.

REFERENCE

1. F. D. Stricker, W. Levin and R. L. Benson, Botulism in Oregon, *Northwest Medicine*, 316, 23, 1924.

RECENT DEVELOPMENTS IN THE CONSTRUCTION AND OPERATION OF THE PHOSPHORUS ANAEROBIC JAR

PHILIP L. VARNEY

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SEVERAL years ago the writer described a method for producing strictly anaerobic conditions by burning phosphorus within a tightly sealed glass jar containing the cultures.[1] While quite satisfactory for most purposes when operated as described, continued use of the jar has shown the necessity for certain changes in its construction and mode of operation, as described below.

The use of galvanized steel or iron wire for the construction of the Petri dish holder, as recommended in the original article, has been discontinued, and either ⅛-inch monel or ⅝-inch brass rod substituted. While the commercially manufactured holder is constructed of monel, brass rod has been found to be more satisfactory and more easily worked when the apparatus is to be made in the laboratory, and is to be recommended for this purpose.

A disadvantage of the old type of frame was that after a period of use of from 6 months to 1 year, concretions of metallic salts formed on the metal, making it very disagreeable to handle, resulting eventually in the total disintegration of the frame. While a very small amount of metallic salts form on a brass frame after several years' continued use, these may be easily removed, and in no way detract from the strength of the apparatus. Monel frames are entirely resistant to the action of the phosphorus and its salts and from the standpoint of cleanliness and durability are superior to either iron or brass.

Because of the great variation in size of the standard 5 by 12-inch museum jars available, it has been found practical to make all frames small enough to fit inside the smallest jar encountered. A frame with an outside diameter of 11.2 cm. and a height of 26 cm. has been found suitable for all 5 by 12-inch jars now sold. The platform should be made 2.5 cm. from the bottom, as shown in Figure I.

Due to their direct contact with the phosphorus and its flames, and the resulting powerful chemical and physical action exerted upon them, the galvanized iron cup for holding the charge of phosphorus, and the gauze screen support originally described, are very short lived, and should be replaced by a monel cup 5 cm. wide and 3 cm. high, and ¼-inch mesh monel metal supporting screen 6 cm. in diameter and 4 cm. high. Because of the highly resistant character of such apparatus, the need for replacements is entirely obviated.

It has been found that when the apparatus is operated as described in the original article, due to the high moisture content within the jar the charge of phosphorus rather quickly becomes covered with water, so that no further oxidation could take place should a leak occur. Furthermore, when placed directly in a metal holder, the phosphorus burns but slowly. It is important, therefore, to protect the phosphorus from the action of these agents, which may be done by placing calcium carbonate (precipitated chalk) in the bottom of the phosphorus cup and tamping it firmly to a depth of about ½ cm. This bed of calcium carbonate acts as an excellent blotter, absorbing all of the excess moisture, and allowing a much more rapid oxidation of the phosphorus than before. It also acts indirectly as

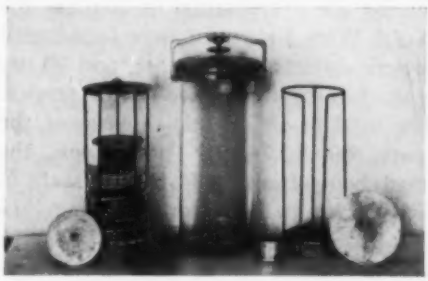
a safety factor, since dry phosphorus will further oxidize on the least entry of oxygen through a poor gasket, thus keeping the atmosphere entirely devoid of free oxygen.

The tin or paper cover (F) described in the original paper should not be used, since it has been found that this leads to the condensation of a great deal of water in the plates, with a consequent increased possibility of contamination. The more satisfactory alternative is to place a sheet of 11 cm. filter papers between each of two Petri dishes, or several sheets above the test tubes, thus effectually protecting them from the deposit of phosphorus trioxide, or from an excess condensation of water.

The asbestos discs used to protect the jar from the action of the phosphorus flames have been somewhat modified, being made as shown in Figure I. A 2 cm. hole is cut in the center of the lower disc so that when the disc is placed in position over the phosphorus, this hole acts as a chimney, drawing a constant supply of fresh air over the burning phosphorus, increasing the rate of exhaustion of the oxygen. The heated air passes upward through this chimney and impinges against the upper disc placed on top of the frame, and thence back to the bottom of the jar. The convection currents very quickly bring the available oxygen to the point of oxidation, with a consequent decrease in the time necessary to produce anaerobiosis, and give a greater factor of safety, since but very little flame impinges on the glass walls of the jar.

The amount of water entering the tubes or inverted plates is usually negligible, but may be quite large in amount if the plates are left in the jar for long periods of time. The deposition of water may be almost entirely eliminated if a small amount of sodium chloride is placed in the water at the bottom of the jar. While this effectually prevents the condensation of water within the tubes or plates, it is disadvantageous to use this method for stock cultures or plates

FIGURE I



PHOSPHORUS ANAEROBIC JAR SHOWING PARTS, WITH A PLATE HOLDER LOADED AND READY FOR INCUBATION

incubated for long periods of time since it leads to the extraction of water from the culture medium, and a consequent decrease in viability of the cultures. While practically all of the common anaerobes may be kept for 6 months to 1 year on blood agar slants within the jar, the cultures die out in a very few months when salt is added to the water.

In selecting jars for use as anaerobic chambers, care should be taken to use only those with a heavy glass shoulder, sufficiently strong to withstand the pressure when the cover is tightly clamped on. Jars having weak shoulders will lead only to trouble through breakage and leaking.

REFERENCE

1. Varney, P. L., *J. Lab. & Clin. Med.*, xi, 1183–1186, 1926.

VITAL STATISTICS

LOUIS I. DUBLIN, PH. D.

The Problem of Heart Disease—Heart disease in all civilized countries is the leading cause of death and of a vast amount of physical impairment. During the examination of men for the World War, 5 per cent were found with organic defects of the heart, and 90 per cent of these were rejected for service. The total of all organic diseases of the heart was 30.74 per 1,000 men, the range being from 68.84 for the state of Washington to 16.29 for Wyoming. In the U. S. Registration Area, 211,976 deaths occurred from all forms of cardiac affections during 1927. The death rate has progressively increased from 165.0 per 100,000 population in 1915 to 196.2 in 1927. The rate for pericarditis declined slightly from 1.1 to 0.9 and that from acute endocarditis from 9.1 to 8.2. The increases are shown by angina pectoris and other diseases of the heart.

In England and Wales the total death rate from heart affections increased from 161.7 per 100,000 population in 1917 to 183.5 in 1927. A slight decrease is shown by pericarditis, whereas acute endocarditis shows a small increase. In New Zealand the death rate from heart affections increased from 143.7 in 1918 to 156.4 in 1927. For the Commonwealth of Australia the figures also show a steady rise in the number of deaths from heart disease. Comparing the aggregate rates for the 4 countries, it appears that the United States has the highest rate for all forms of heart diseases for the year 1927, or 196.2 per 100,000, compared with 183.5 for England and Wales, 156.4 for New Zealand and 133.8 for Australia.

The mortality rates given for the U. S. Registration Area for 1925 show immense variations. Thus, while the average rate for 1925 for the Registration Area was 185.5, it was 216.2 for the cities and 159.5 for the rural portions of the registration states. It was as high as 262.2 for New York and as low as 83.1 for Idaho. At the present time no explanation can be offered for these variations, except that they depend to a considerable degree upon the age distribution of the population. A strictly scientific study of heart diseases on the basis of mortality data at the present time is practically impossible. The unfortunate classification of "other diseases of the heart" is too large to justify definite assumptions as to the increase or decrease in particular forms of heart impairments.—Frederick L. Hoffman, *Spectator*, 123: 3, 23–25 (Aug. 29), 1929.

Bovine Tuberculosis in Children—A study of the incidence of bovine infection in children has been carried out for the past 3 years, in the Toronto district, under the auspices of the National Research Council of Canada. From a group of 168 children all under 14 years of age, a total of 190 strains of tubercle bacilli were recovered. Of the 190 strains identified, 160 which were recovered from 148 children proved to be of the human variety, and 30 strains recovered from 20 different children were of bovine origin. The oldest of these 20 patients was 12 years of age, and the youngest an infant of 5 months.

In the great majority of the cases from which the human type of bacillus was recovered, a history of contact to open tuberculosis was obtained, and in a certain proportion of the surgical cases, there was evidence of tracho-

bronchial or pulmonary tuberculosis demonstrable on physical examination or x-ray. All these children reacted to tuberculin. In 65 cases of bone and joint tuberculosis, 63 were of the human type and 2 of the bovine type; in 32 cases of tuberculous meningitis, 31 were of the human type and 1 of the bovine type; and in 16 cases of tuberculosis of the lymph nodes, 4 were of the human type and 12 of the bovine type.

All the children with the bovine type of tuberculosis came from districts where pasteurization of milk is not carried out. None of the children, with the exception of 1 case, showed evidence of pulmonary or tracheo-bronchial tuberculosis. The evidence pointed to the alimentary routes of infection. From this study it appears that bovine tuberculosis is a factor in childhood infection in rural Canada, and in unpasteurized areas. Tissue localization of the bovine tubercle bacillus is peculiar in certain regions, the lungs being practically immune.—R. M. Price, *Canad. Pub. Health J.*, 20: 323–330 (July), 1929.

Economic Status and Incidence of Illness—This is the tenth morbidity study in the series carried out at Hagerstown, Md., by the U. S. Public Health Service. The survey was begun in the autumn of 1921. Approximately 1,800 households were visited, and classified in groups ranging from well-to-do to very poor. The usual association of crowding with economic status was observed, the average number of persons per room being 0.43 for the well-to-do, as against 1.18 for the very poor. A consistent association of illness incidence and economic status was indicated.

During the period December 1, 1921, to March 31, 1924, the well-to-do and comfortable group combined had an annual illness rate of 991 per 1,000 persons, as compared with 1,068 for the moderate group and 1,113 for the poor and very poor groups combined. Some general associations were noted between specific illness and economic status. Influenza and grippe rates ranged from 123.7 per 1,000 persons for the well-to-do to 149.0 for the poor; rheumatism showed a rate of 13.6 for the well-to-do and 21.4 for the poor group; headaches, nervous conditions, and accidents showed similar variances.

The commoner infectious diseases, diseases of the circulatory, digestive and eliminatory systems, showed no correlation with the economic status. Association of illness with economic condition is differently manifested for infants than for adults. For children under 4 years of age the illness rates from all diseases varied from 1,817 per 1,000 for the comfortable group to 1,554 for the poor group; for the 10 to 14 year group the rates varied from 1,263 for the comfortable to 1,179 for the poor; whereas in the older age groups, higher rates were found among the poor than among the comfortable. For ages under 4 influenza gave an illness rate of 131 per 1,000 for the comfortable and 99 for the poor, as against 151 for the comfortable and 172 for the poor in the 25 to 44 year group. The rates for infectious diseases, particularly whooping cough and chicken-pox, were higher among children of well-to-do parents than among poor children.

The proportion of all cases attended by physicians was 70 per cent in the well-to-do and comfortable groups, as compared with 43 per cent in the poor group. However, for diseases of the nervous system, non-venereal diseases of the genito-urinary system, diseases of the bones and organs of locomotion, and the general diseases, the proportion attended by physicians was as great among the poorer families as among those of higher economic status. The results of this study show that the illness rates as observed were higher for the poor than for those economically better off, and in general, those families

which were definitely better situated economically had more medical attention than the remainder of the population.—Edgar Sydenstricker, *Pub. Health Rep.*, 44: 1821–1833 (July 26), 1929.

Late Results of the Manitoba Epidemic of Poliomyelitis of 1928—A late analysis of the data concerning the Manitoba poliomyelitis epidemic of 1928 shows that of 272 cases concerning whose present or recent condition it has been possible to obtain data, 143 had completely recovered and 128 still showed some degree of paresis or paralysis. The total number of deaths attributable to the epidemic was 40. In April, 1929, a report of 161 cases made by the Medical Research Committee of the University of Manitoba showed the results of convalescent serum therapy. Of the 161 cases, 69 treated with serum in the pre-paralytic stage made a complete recovery, as compared with 7 cases treated after the onset of paralysis.

More recent data were available concerning 117 of the 161 cases dealt with in the earlier report. These results concern the condition of patients from the epidemic at least 6 months after partial or complete recovery from it. Of the 60 cases treated with serum in the pre-paralytic stage, 54 or 90 per cent appeared to have completely recovered shortly afterwards, and 52 maintained this condition. These late results confirmed the conclusions in the previous report as to beneficial treatment of convalescent serum when given in the pre-paralytic stage. Of 6 cases treated with serum in the pre-paralytic stage and subsequently developing paresis or paralysis, 1 showed a delayed complete recovery. Of 16 treated with serum after the onset of paresis or paralysis, 3 showed a delayed complete recovery, and of 32 untreated with serum, 10 showed a delayed complete recovery. These of course do not include earlier recoveries. The 5 cases treated with convalescent serum in the pre-paralytic state, which showed at the time of the earlier report some degree of paresis or paralysis, showed definite improvement in the recent follow-up. Eleven of the 13 who received serum after the onset of paralysis and still showed paralysis were improving. The same was true of 17 of the 22 untreated cases still showing paralysis. The majority of the cases exhibiting improvement were being given the recognized orthopedic treatment.

Recent data concerning 83 of 158 cases in another series were also available. In this second group, it was uncertain whether serum was given in the pre-paralytic stage or later. The conclusions were in general agreement with the group of 117 cases. All of the 6, and 23 of the 35 cases now exhibiting paralysis, in the groups who respectively did and did not receive serum, show definite improvement. The majority of these cases were also receiving orthopedic treatment. In the remaining 75 cases only a present report was obtained. Of these, 27 reported complete recovery, 45 had present paresis or paralysis and 3 deaths were reported subsequent to the earlier report. These findings show the beneficent effect of convalescent serum treatment when given in the pre-paralytic state.—Mary McKenzie, *Canad. M. A. J.*, 21: 291–294 (Sept.), 1929.

Mortality in Amsterdam, Holland—A report of the Amsterdam Bureau of Vital Statistics for 1928 shows that the birth rate, inclusive of stillbirths, was 18.8 per 1,000 population. Of the 13,530 live births, 586 died during the first year of life. This gave an infant mortality rate of 43 per 1,000 live births. There were 40 deaths from measles during 1928, as compared with 99 during 1927. Scarlet fever prevailed as an endemic disease but caused only 6 deaths. There were 48 deaths from

whooping cough. This disease was especially prevalent among children under 1 year of age, the mortality in this group being as high as in the 1 to 4 year group.

Diphtheria caused 22 deaths during the year. The fatalities from influenza were reduced from 186 in 1927 to 118 in 1928. There were 421 deaths due to pulmonary tuberculosis, and 938 due to malignant tumors. The puerperal mortality rate was 4.6 per 1,000 live births. There were 19 cases of puerperal fever. —*J. A. M. A.*, 93: 786 (Sept. 7), 1929.

The Birth Deficit in Germany—Before the War, the German Empire, with average annual totals of 2,000,000 births and 1,200,000 deaths, had an annual excess of births over deaths of about 800,000, or from 12 to 14 per 1,000 population. In 1927, there were 1,160,000 births or 18.3 per 1,000; 757,000 deaths or 12.0 per 1,000, and an excess of births over deaths of 403,000 or 6.4 per 1,000, which is about one half the pre-war status. However, this can be accounted for by the peculiar distribution of age groups. According to an analysis freed from the accidental data of the distribution of age groups, the death rate is 17.4 per 1,000 population as against 12.0 per 1,000 under the unadjusted computation.

The readjusted birth rate is not 18.3 but 15.9 per 1,000. Instead of an excess of births over deaths, this shows a deficit of 1.5 per 1,000 population, which is 10 per cent below the figure needed to keep the population stationary. The birth deficit in Berlin is 57 per cent, and the average birth deficit of the large cities of Germany is 42 per cent, as compared with 31 per cent for such metropolitan centers as Paris and London. The rural regions occasionally show birth rates in excess of the minimal requirement for the preservation of the population.—*J. A. M. A.*, 93: 473 (Aug. 10), 1929.

PUBLIC HEALTH ENGINEERING

ARTHUR P. MILLER, C. E.

Feeding Chlorine Through Long Pipe Proves Satisfactory—At the Chain of Rocks Plant of the St. Louis Waterworks, the difficulty of transporting chlorine cylinders from the unloading floor to the chlorinators, a distance of 800 feet, led to the conveying of the chlorine by a pipe. Batteries of 8 cylinders each are connected, on the unloading floor, to manifolds, which in turn are connected to a ¾-inch galvanized pipe leading to the chlorinators. This passes through a pipe gallery where the temperature is always low. At first trouble was experienced with liquefaction. When a new battery of cylinders was turned on, the high pressure resulting from the low temperature caused the chlorine to spurt from the control valve, which soon clogged. This was remedied by installing a reducing valve on the long line and maintaining a pressure of less than 100 pounds per square inch. All liquefaction trouble has been overcome.—A. V. Graf, *Eng. News Rec.*, 24: 102, 1929. (From papers of Water Pollution Research Board, England.)

The Development of Water Supply After the War—After the war, water works in Germany suffered from lack of material, strikes, and depreciation of money value. Building was almost impossible though Wiesbaden rebuilt its water works by using unemployed labor. After the stabilization of the Mark other cities, for example Hamburg, proceeded with building and extension work. The removal of water works from state control to companies has been a great incentive to progress and economy. Taking into account the general depreciation of money values, water in most towns is cheaper than before the war. Works built after the period of inflation, however, are in a different condition and prices are often very high.

Many towns endeavored to raise the standard of their water after the war and ground water was largely substituted for river water. So-called "ground river water," i.e., water from wells sunk in the valley of a river and gathering the naturally filtered river water, has been used. At Wiesbaden this proved unsatisfactory and had to be treated with chlorine and ozone, and a supply of artificial ground water, water drawn from the river and treated, has been substituted.

Several epidemics of typhoid broke out and, though they were mainly due to fortuitous combinations of unfavorable circumstances, they led to more careful considerations of water works conditions.

Treatment with chlorine has increased since the war. Slow sand filtration has been largely abandoned, rapid filtration with subsequent chlorination being substituted. Water softening is also more practiced than formerly, especially owing to the growth in the use of high pressure boilers. Corrosion and incrustation of pipes has been investigated and the best means of prevention found in treatment of the water. Piston pumps are being largely replaced by rotary pumps.—E. Grosz, *Ztsch. f. Kommunalwirtschaft,* 8, 19: 460, 1929. (From papers of Water Pollution Research Board, England.)

Technical Progress in Water Works Management—The article gives examples of progress in water works management after the war. The great aim is to replace small water works with great central supplies providing water for larger areas. Such systems are being prepared in Middle Saxony and for supplies from the South and East Harz valley dams, which serve the purpose of the English storage reservoirs in supplying a very greatly increased summer need. It is also intended to use surface waters to increase and enrich ground water supplies.

In water preparation rapid filtration is quickly superseding slow sand filtration. Treatment with lime water for de-acidification and with chlorine for bacteriological purification have increased largely.

Control of operation by a works laboratory, which in the case of small works could be used in conjunction with neighboring works, is important.

Electric working of pumps either fully or partly automatically controlled is being more and more adopted. The general type of valve is the wedge-shaped but under special circumstances ball valves are being applied. These in some cases include in their casings instruments for measuring and recording the flow.

Lately ferroconcrete pipes have come largely into use. These consist of a thin sheet metal jacket reinforced inside and outside with ferroconcrete. De-acidifying of the water is especially important when such pipes are used. With main pipe lines special devices against flooding, with automatic or semi-automatic working, are installed. Emergency repair services for night

work or times of frost are essential. Movable indicators are used for showing defects, a simple type being the geophone, a highly sensitive drum with weight-stretched membrane.

For the welfare of the workers it is advisable for large works to procure the services of a safety engineer.—Vollmar, *Ztsch. f. Kommunalwirtschaft,* 8, 19: 467, 1929. (From papers of Water Pollution Research Board, England.)

Examination of Swimming Baths—In 1926 the two filter plants for the Munich public baths were replaced by one for which the same chlorinating plant served. Experiments and observations were carried out on the condition of the water and the effect of filtration and chlorination.

Condition of the Water. Chlorinating removed the smell which, though the water itself appeared odorless after 14 days' retention, had been previously noticed in the building. Kisskalt's method for estimating turbidity gave satisfactory conditions of clarity after 14 days' retention period. The pollution of the bath by bathers is discussed and details of different analyses before and after use are given. Chloride content generally varied, nitrates increased more or less substantially, dissolved organic matter seemed to show little change though when estimated by its chlorine combining power it rose definitely. Comparative analysis in the case of the Munich baths was difficult, for the water is drawn in varying proportions from two differing sources. Chemical and physical measurements of turbidity are more useful in estimating purity than chemical analysis of dissolved matter but the latter, especially in the case of nitrogen-containing matter, should not be neglected.

Chemical condition corresponds to a large extent to appearance but this is never the case with bacterial condition. In the first 2 or 3 days after a new filling the germ-count grows while the water remains clear, then it sinks and remains low while the water becomes more turbid and deteriorates chemically. The germ count therefore does not serve as a measure of impurity but it is useful to test the working of filtration and chlorination.

The danger of infection by bath water is very slight and is to be judged not by germ-count but by estimation of coli-titer. A knowledge of the health conditions of the city is necessary in estimating the possibility of danger.

Effect of Filtration. A Bamag filter, 870 mm. deep with graduated filling, varying from 20–30 mm. to 0.1–1 mm., is used. The bath is refilled every 14 days and has a daily fresh water addition of 5 per cent of its content. Filtration was found to remove 71 per cent of suspended, 74 per cent of organic and 50 per cent of inorganic matter. Experiments showed that a rapid flow-through had no effect on the bacterial count while very slow flow caused turbidity in the bath; therefore a flow of 75 cm. per hour, or 3.4 cm. through 1 square meter of filter per hour, was chosen, whereby the germ-count was decreased 50 per cent.

Effect of Chlorination. The Bamag direct process is used. The chlorinated water enters the bath continuously through numerous small holes in a pipe across the width of the bath floor. By a comparison of chlorine additions in various baths, Lemmel found that the amount rose almost proportionately to the number of bathers. To make the chlorine excess sufficiently strong to remove danger of infection in the bath itself requires an excess of 0.3–0.5 mg. per liter, which is unpleasant to the bathers and, by dissolving out organic matter from the filter, renders the water turbid. Hamburg meets the difficulty by a large dose of chlorine and then clearing the water with aluminum sulphate before filtration, but this must

cost considerably more than simple filtration. Lemmel and Olszewski demand in the swimming bath water an excess detectable by benzidin but not by zinc iodide starch reaction. This amount, however, affects filter working and leads to turbidity. When this excess was detectable in the flow-off, the author found chlorine smell over the filter and sometimes in the bath hall and some turbidity towards the end of the 14-day filling period. Bacterial count decreased but as this is not a criterion of purity and *B. coli* was as effectively removed by a lower chlorine dose, the chlorination used by Munich is only strong enough to give a definite excess in the entering water (0.35–0.4 mg. per liter) but not to be constantly positive to benzidin reaction at the flow-off.

References to literature on the subject are given.—H. Ilzhofer, *Gesund. Ing.*, 32, 51: 513, 1928. (From papers of Water Pollution Research Board, England.)

Economic Significance of Malaria to an Industrial Concern: A Railway—Recognizing the importance of determining in so far as possible the economic loss due to malaria in an area prior to recommending expenditures, this article describes the result of such a survey in one of the important districts in which the E. B. Railway operates in India. The summary given by the author briefly describes the type of survey made and the determinations, and is here quoted:

(1) A brief description of the physical features of the Lalmanirhat district of the E. B. Railway together with its malarial distribution has been given; (2) the district comprises areas of varying physical features with different degrees of malarial incidence; (3) the number of cases of malaria and the number of cases of all other sickness in the district for the three years 1924, 1925 and 1926 are given for comparison; (4) the number of days lost to the Railway on account of malaria amongst the staff is given, and this is compared with the number of days lost from all other sickness; (5) the monetary value of the number of days lost from malaria has been estimated for the three years 1924, 1925 and 1926 and this has been shown to be not a negligible amount; (6) what percentage of the loss from all sickness does malaria alone contribute? This has been calculated and incidentally the anti-malarial measures started in 1925 have been shown to have been effective in reducing the loss due to malaria from 43 per cent in 1924 and 50 per cent in 1925 to 35 per cent in 1926.

Three graphs and accompanying tables are included indicating the influence of malaria on total cases of sickness and days lost through illness of railway employees in the Lalmanirhat District.—C. R. Rao, *Indian M. Gaz.*, 63, 10: 568–573 (Oct.), 1928.

Rat-flea Survey of the Port of Norfolk, Va.—This report is one of a series of reports of rat-flea survey work done by the U. S. Public Health Service at various United States ports for the purpose of obtaining and recording data that might be useful in determining the bubonic plague hazard at such ports.

The fact that some United States ports have had bubonic plague infections while other large and busy seaports have escaped lends value to such data. An hypothesis for this condition which has been suggested is referred to as well as observations in India relative to *Xenopsylla cheopis*, which is the predominating rat flea in certain parts of that country. Mention is made of the view held by some authorities that *Xenopsylla cheopis* is the only flea that need be considered in the transmission of plague from rat to rat under natural conditions and of the *Xenopsylla cheopis* index as the measure of infectibility of any community. By *Xenopsylla cheopis* index is meant the average number of *Xenopsylla cheopis* per live rat in the locality under consideration.

The report discusses the methods employed in the rat-flea survey at Norfolk, the distribution of rats, the distribution of fleas, and includes a comparison of

the results with similar studies at other United States ports. Tables containing the above data as well as data for other ectoparasites encountered are included.

The conclusions of the report are as follows:

Upon the basis of the findings of the 12 months included in the period of this survey, it is evident that *Xenopsylla cheopis* is the predominant rat flea in Norfolk for 8 months of the year.

The *Xenopsylla cheopis* index (2.56) of Norfolk seems sufficiently high to warrant the sanitary authorities in considering the port as probably infectible with plague, and the port should be diligently guarded against the introduction of plague, especially during the warmer months of the year (June 1 to December 1). It appears that conditions in the city are highly favorable for the perpetuation of the rat genus and that Norfolk has, at least, the average density of rat population that prevails in most cities of the Atlantic seaboard.—

H. E. Hasseltine, *Pub. Health Rep.*, 44, 11: 579–589 (Mar. 15), 1929.

The Bacteriological Control of Shellfish—The bacteriological control of shellfish is one of importance because of (a) the preference of shellfish for localities where the density of the sea water has been reduced by admixture with fresh river water; (b) the presence of sewage in nearly all rivers; (c) the addition by enteric cases and carriers of the causal organism to such sewage; (d) the fact that shellfish are frequently eaten uncooked.

Two methods commonly employed in the examination of shellfish for *B. coli* are Houston's and Klein's. Both methods are described briefly in the article. Houston's *B. coli* standards for oysters are: strict standard = 100 *B. coli* per oyster; lenient standard = 1,000 *B. coli* per oyster.

Another method employed by Prof. Eyre (London) consists of using 0.2 c.c.m. of the mixed shell fluid and minced flesh from each of 10 oysters picked at random from a batch. If *B. coli* are absent in this volume the oyster is regarded as "clean." Oysters are allowed to be sold only where 60 per cent or more in a batch are clean.

The author of this article is concerned chiefly with the examination of mussels and uses essentially the method of Klein. Comparison with the results of other bacteriologists and with different methods reveals certain discrepancies resulting from the following causes: (1) Errors in technic; (2) alteration in the mussels due to delay or conditions of transmission to the laboratories; (3) errors in sampling.

The third cause is considered most important and responsible for most of the discrepancies in that there is a chance for a wide variation in the selection of mussels for examination and in the selection of the particular fraction of mussel fluid to be examined. For the above reasons Klein's method is criticised with the recommendation by the author of another method, as follows: That 0.5 c.c.m. of the mixed fluid from the mussel is added to 4.5 c.c.m. of sterile saline, yielding a 1 to 10 dilution. Of this 2 c.c.m. are added to one tube of lactose bile broth, 1 c.c.m. to a second tube and 0.2 c.c.m. to a third tube. A positive result in the respective tubes indicates 100 *B. coli* per mussel, 200 *B. coli* per mussel and 1,000 *B. coli* per mussel corresponding to the strict, moderate, and lenient standards. The strict and lenient standards are the same as those of Houston's and the moderate the same as Klein's. Application of the author's test in actual practice is also explained briefly.—J. W. Bigger, *J. State Med.*, 36, 11: 638–641 (Nov.), 1928.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST, M. D., AND LEONARD GREENBURG, PH. D.

Thirty Years' Experience of Industrial Maladies.—After 27 years as Senior Medical Inspector of Factories, the author is amazed at the progress which has been made. Especially noticeable is the progress in illumination and locally-applied exhaust ventilation. In 1899, only 2 of the 23 white lead works had a vestige of exhaust ventilation for the removal of dust. So it was, too, in the 866 brass foundries in Birmingham, England, when the author visited them in 1903 on the request of those suffering from brassfounders' ague. Now every white lead factory is equipped with a system of locally-applied ventilation, and the conditions in brass-casting workshops are vastly better. But more important than that is the spirit of invention in the trades themselves in the discovery of labor-saving devices.

Throughout these lectures I shall lay stress, as a kind of test, on three axioms which experience has led me to enunciate. They are: (1) Unless and until the employer has done everything, the workman can do next to nothing to protect himself. (2) If you can bring an influence to bear external to the workman (i.e., one over which he can exercise no control) you will be successful; and if you can't, or don't, you won't. (3) All industrial lead poisoning is due to the inhalation of dust and fumes; and if you can stop their inhalation you will stop the poisoning. It is not due to dirty hands (i.e., eating with unwashed hands).

Examples of the influences I have in mind are:

(1) Prohibition, e.g., by the substitution of sesqui-sulphide of phosphorus for yellow phosphorus (effected by the Berne Convention).

(2) Conversion of pulp white lead into oil paint ready for the market in automatic closed-in machines without dry grinding.

(3) "Low solubility glaze" in pottery manufacture, by which the same amount of raw carbonate of lead may be used, but so combined in calculated quantity with siliceous material in a "frit" as to be practically insoluble in the gastric juice.

(4) Plastic rubber, that is, rubber in which lead oxide has been incorporated in a "mother batch" to the extent of 90 per cent, thus abolishing production of lead dust in later processes (first put into practice by Mr. C. A. Klein, Chemist to the Associated Lead Manufacturers, Ltd.).

(5) Disinfection of anthrax-infected wool by formaldehyde—the Duckering process—as carried out in the Government Wool Disinfection Station (Home Office), Liverpool; and finally, though not quite so successfully,

(6) Locally-applied exhaust ventilation by a fan.

Examples of influences, useful up to a point, but no remedy, which are not external, but depend on the will or whim of the worker to use them, are respirators, gloves, goggles, washing conveniences and waterproof sandpaper.

The statistics of notifiable diseases were in a state of chaos, so that detailed figures did not commence until 1900. It was necessary to see that no case of lead poisoning was included more than once in each year—second notifications being probably due to relapse or incomplete recovery from the first attack. A defect in the system is that notification by the medical practitioner has to be made to a layman. It was a fortunate accident that Sir A. Whitelegge was a medical man. Generally speaking, any symptoms necessitating absence from work and appeal to a doctor for treatment constitute sufficient grounds for notification. The slow onset of these insidious, industrial maladies, in which the patient passes through

a stage of absorption, does not amount to poisoning.

The principal results achieved from notification in the case of 11 notifiable diseases and poisonings for the years 1900 to 1928 inclusive, are shown in a chart, after which are taken up in some detail the subjects of mercury, arsenic, and phosphorus poisoning, anthrax infection, toxic jaundice (trinitro-toluol poisoning), skin cancer, chrome ulceration, aniline and carbon bisulphide poisoning. Of chronic benzol poisoning only one case has been notified.

Concerning skin cancer in mule spinners the author quotes Twort, working in Manchester, to the effect that "the carcinogenic activity of an oil is much reduced or completely removed by extraction with sulphuric acid or by oxidation and by reduction." About 9 cases every month of skin cancer occur among the 33,000 mule spinners in Lancashire. The percentage of deaths is low—not 3 per cent among patent fuel workers (from skin cancer), about 9 per cent among tar distillers, about 33 per cent among cotton mule spinners, and over 47 per cent among retort house and pitch diggers in gas works. The reason for these differences, in the author's opinion, is that only a fraction of the cases is being reported in tar distillers and gas workers, while nearly all are reported among patent fuel and shale oil workers. The salient feature about skin cancer is that not 5 per cent begin to show the malady under 30 years of age, while the average age for contraction is about 52 years. Likewise, less than 3 per cent show the disease in dangerous form under 20 years' duration of employment, while the average exposure is approximately 40 years. "Periodic examination, therefore, should be limited to mule spinners aged 40 or over and with a duration of employment of 30 years." In compensation for deaths alone the cotton industry must anticipate paying 10,000 pounds a year until it realizes the value of periodic examinations twice yearly. Dr. Henry has gone a long way to prove that the incidence of skin cancer among the mule spinners results from the gradual change-over in the "sixties and seventies" from animal and vegetable to mineral oils, for the purposes of lubrication. —Sir Thomas Morison Legge, late H.M. Senior Medical Inspector of Factories. *J. Roy. Soc. Arts*, 4006: 1007–22 (Aug. 30), 1929.

The Organization of Treatment of Accidents and Diseases among Workers of Rand Mines—The gold mines under the control of the Central Mining Rand Mines Group, Witwatersrand, Transvaal, compose 14 gold mines, employing approximately 85,000 natives (Negroes of the Bantu race), and 10,000 Europeans. The depths of the workings vary from nearly 2,000 to nearly 8,000 feet below the surface of the ground. The average elevation of Witwatersrand above sea level is about 5,600 feet; thus the deepest mines reach a depth of about 2,000 feet below sea level. The actual mining is carried out with drills, using compressed air, and the blasting is done with great quantities of gelignite owing to the hardness of the strata, which are rich in silica. For the latter reason large quantities of water are used to keep down the dust, but this results in a saturated humidity. Temperature increases approximately 1° F. for every 200 feet of depth so that that of the deeper workings is high, and combined with a high humidity, necessitating potent ventilation to render working conditions possible. The natives are housed and fed by the mines, but supply their own clothing.

It is a part of the legal obligation of mine owners to provide the natives with free medical treatment for both diseases and injuries; also to provide

hospital accommodations equivalent to 2½ per cent of the number employed, as well as a sufficient number of full-time medical officers. Thus there are 3 central native hospitals having 1,264 beds; 4 other hospitals with 668 beds; and 7 clearing hospitals or dressing stations with approximately 415 beds. Both European nurses and native girls trained as nurses are employed.

On returning from work every native is inspected by a native watchman for injury or sickness, and for any such he is immediately conducted to an ambulance room where his medical care begins. A very elaborate organization has been built up for dealing with accidents; also a first aid training system. A considerable number of the Europeans and over 2,000 natives possess certificates in first aid (the equipment is described in detail).

The number of accidents is large and the medical staff can fairly be said to be highly expert in the treatment of same. For example, in the treatment of penetrating wounds of the knee a standard method has been devised:

> which has given surprisingly good results, consists of excising badly damaged tissues, if necessary widening the opening, washing out the joint with ether, applying a preparation known as Bipp, which is a bismuth, iodoform and soft paraffin paste, and closing up the wound. Light passive movement is started within a day after the operation, and continued with gradually increasing range. When the patient is able to walk about, apparatus intended to increase the range of motion is used. The one most commonly employed is in the form of a stationary bicycle, which the patient pedals against resistance offered by an adjustable brake band.

The most serious disease is pneumonia, the number of cases of which is very high although the case mortality is low, 12.29 per cent for the year 1927. The natives are also very prone to tuberculosis. Last year 529 cases of the pulmonary form were admitted to the hospitals with a case mortality of 62, or 11.72 per cent. This does not, however, include those sent home who were able to travel. It is admitted that in spite of the large amount of material no important contribution has so far been made to the therapy of either pneumonia or tuberculosis.

Hookworm disease infects some 60 per cent of natives recruited from Mozambique, and 20 per cent of those recruited in South Africa, but it is very rare to find any clinical symptoms of the disease among natives. The majority of natives arriving at the mines are suffering from vitamin deficiency, particularly of the antiscorbutic vitamin, with a tendency to hemorrhage from the gums and into the joints and muscles, as well as easy ulceration at the sight of slight injuries. On this account the diet of natives has been specially arranged to combat this condition of scurvy.

The medical service for European workers is elaborate. They receive half their average earnings when incapacitated by sickness or injury; medical attendance for themselves and members of their families for sickness, injury, and maternity; funeral expenses similarly; a lump-sum compensation for any disability sustained, and likewise to the estates in the case of death. Beyond this, some 12,000 pounds per annum are raised and expended voluntarily for the surgical treatment of serious accident cases. The employee is given wide choice of attending surgeons, while specialists are available for any case requiring them. In the past year 622 Europeans were given surgical attention for injuries at an average cost of 2.027 pounds per patient.

All employees undergo a routine physical examination which, in the case of natives, may include a radiographic chest examination. Each native is reexamined at intervals of not more than 6 weeks. About one third of the Euro-

pean applicants are rejected for employment, and the balance must be reexamined every six months. On the first detection of silicosis, one is warned. If any signs of tuberculosis are detected, he must cease employment as a miner. If the worker with beginning evidences of silicosis elects to retire, he is given a lump sum of 375 pounds or more, depending on his average earnings. Advanced stages of silicosis and silicosis with tuberculosis are given a life pension, to which the widow and children are also entitled.

At the central rescue training stations skill in the use of oxygen-breathing rescue apparatus is required, as well as in the use of Burrell All Service Gas Mask, and the methods of detecting CO underground. The writer is head officer of the medical organization described. —A. J. Orenstein, M.D., *Opera Collecta*, Fifth International Medical Congress on Industrial Accidents and Occupational Diseases, Budapest, 1929, pp. 475–483.

Perforation of the Nasal Septum in Chromium Workers—The affliction noted occurred among chromium platers using an electrodeposition: a fine mist rises aboves the process composed of chromic acid particles which may affect the skin or cause ulceration in the nose. (A review of the literature is cited.)

A series of 18 cases is here reported. In 2 workers, complete perforation of the nasal septum with openings ¼ inch in diameter were found after only 6 weeks' exposure. The process is painless; an irritated feeling is experienced when the worker first comes into contact with the fumes. It is not disabling. Most of the workers were unaware of the perforation. Bleeding was not severe and this only when the crusts were forcibly expelled. The sense of smell was impaired in only one case. Difficulty of breathing was not encountered save when crusts blocked the passage ways. In all cases the perforation was limited to the cartilage portion of the septum and at its posterior part. Hence the shape of the nose was never affected.

The first symptoms experienced upon entering the chrome room were sneezing and a burning sensation in the nose. After a few days bleeding was encountered, followed by crusting. A whistling sound during breathing was noted in the majority of cases when the perforation was small.

Protection of the workers is effected by a strong lateral suction in which the air velocity should be 2,000 feet a minute. Air velocity should be measured by a kata thermometer. The fumes being heavy should be withdrawn laterally (and downward). Proper ventilation of the nature described prevents the irritation.

In treatment, employees must be warned not to pick at the nose, the nurse should check up daily all cases of irritation, and ordinary plain vaseline to the septum causes all unpleasant symptoms to disappear.—Fred W. Dixon, M.D., *J. A. M. A.*, 93, 11: 837–38 (Sept.), 1929.

FOOD, DRUGS AND NUTRITION

WALTER S. FRISBIE

Green Tea as a Source of Vitamin C—Green tea has recently been reported as a rich source of Vitamin C. Miura and Tsujimura, the first investigators in 1924, reported that an infusion from a gram of green tea prevented scurvy in guinea pigs for 60 days. This was further substantiated by other workers using the curative method of experimentation. A 3-month feeding experiment was undertaken in the Bureau of Home Economics of the U. S. Department of Agriculture in which the protective method on guinea pigs was used. A Japan green tea labeled " rich in vitamin C " was used in the form of an infusion of a level teaspoonful to the cup infused 4 minutes. Only sugar was added to the tea infusion which was fed to guinea pigs which had been kept on a basal diet supplemented by cabbage and carrots until weight gains were noted. In addition to the animals receiving tea there were positive controls with orange juice and negative controls with the basal diet alone. The tea and orange juice were given 6 days a week. Tables are given of autopsy findings showing the severity of the bone changes and hemorrhages. Guinea pigs receiving 15 c.c. of tea lived on an average of 42.7 days and those receiving 10 c.c. of tea averaged 39.3 days, while the negative controls averaged 36.5 days. The animals receiving 2 c.c. of orange juice lived throughout the period of 90 days and made gains in weight with no symptoms of scurvy. Guinea pigs receiving tea lived slightly longer than the negative controls. It was concluded that the amount of vitamin C present in this tea is very small. Discrepancies between these findings and those of previous investigators may be due to the use by the former of milk in the tea and also to the probability of the presence of undepleted vitamin C in the animals when the curative method is used.—Hazel E. Munsell and Hilda Black Kifer, *J. Home Econ.*, 21: 514 (July), 1929.

Distribution of Vitamin B_2 in Certain Foods—Previously reported work has established that vitamin B_2 is present both in fresh, unheated yeast and in autoclaved yeast and that cereals are richer in vitamin B_1 than in vitamin B_2 and the reverse is true of milk. This experiment employed wheat and maize kernels since it is alleged that pellagra is more prevalent in the case of maize than in wheat diet. The basal diet consisted essentially of an antineuritic concentrate and casein mixture purified as far as possible to eliminate vitamin B_2 and supplemented by cod liver oil. The cereals were mixed with a basal ration so as to keep the proportion of protein, carbohydrate and fat as 20 : 60 : 15. The cereal modified ration was fed to young rats which had been on a basal diet for 1 week. Comparisons of growth were made in the 4 weeks after the first week on the modified diet. Two different types of whole wheat were tested as well as various portions of the berry. Fifty per cent of whole wheat was required in the diet for sufficient growth. The endosperm is a poor source of vitamin B_2. Wheat embryo and bran are equivalent, 15 to 30 per cent providing sufficient vitamin. Fifty per cent maize in the diet was insufficient for normal growth. The endosperm " grits " are very low in the vitamin but the value of maize as a whole is lower than that of wheat.

Dried ox liver, yeast and fresh whole milk are good sources of vitamin B_2 while dried meat and egg yolk are better than the cereals. There is a discussion of the deficiency symptoms in rats as shown when vitamin B_2 is absent from the ration and this is compared with the black-tongue experiments on dogs and with the "P. P." factor in human beings. All three are assumed to be similar and involve the vitamin B_2 or pellagra-preventive factor.—Wallace Ruddel Aykroyd and Margaret Honora Roscoe, *Biochem. J.*, 23: 483, 1929.

Further **Observations on the Effects of Large Doses of Irradiated Ergosterol**—Reference is made to the work of previous investigators (abstract this JOURNAL, 19, 10: 1160 (Oct.), 1929) reporting injurious effects of over-doses of irradiated ergosterol and the experiment was undertaken to determine the cause of the formation of the calculi in experimental animals. Rats were placed on an experimental diet consisting of 1 per cent of irradiated ergosterol in cacao butter so that 10 gm. of the completed diet contained 20 mg. of the irradiated ergosterol. Urine was collected from the rats in 3-day periods and analyzed for phosphates, chlorides, and pH value. The rats which maintained a steady food consumption during the control period immediately lost appetite when the irradiated ergosterol was fed. They lost weight for a short period but after this the weight remained constant. The urine output maintained a constant level throughout the experiment but the phosphate excretion varied from day to day and at a high level compared to the control animals. Three days after the administration of the ergosterol diuresis appeared which continued throughout the experiment. The cause of the diuresis is unexplained unless it is due to the marked increase in the calcium excretion. Determination of the chlorides and pH value of the urine during the last days of the experiment showed no differences in these over the controls. After the onset of diuresis the total phosphate remained practically at its previous level with daily fluctuations.—John Clifford Hoyle and Harry Buckland, *Biochem. J.*, 23: 558, 1929.

The Storage of Manganese and Copper in the Animal Body and Its Influence on Hemoglobin Building—In a previous paper (abstract this JOURNAL, 19, 3: 327 (Mar.), 1929) data were presented to show that copper and manganese were effective in hemoglobin formation. This paper presents data to show that manganese and copper may be stored in the animal body. Whole cow's milk supplemented by 0.1 mg. of manganese as chloride was fed to young rats for 5 weeks, after which the manganese was replaced by 0.5 mg. of iron chloride. The second lot for the same period received 0.05 mg. of copper as sulfate, for which 0.5 mg. of pure iron was later substituted. The third lot received 0.5 mg. of pure iron as chloride for the entire period. The first 2 lots showed a low hemoglobin content until the iron supplement was added. The third lot gradually developed anemia but not so rapidly as those without the iron supplement. It is concluded that the animal utilizes a small amount of iron due to copper or manganese stored in the body at birth.—R. W. Titus and J. S. Hughes, *J. Biol. Chem.*, 83: 463 (Aug.), 1929.

Experiments on Nutrition. IX. Comparative Vitamin B Values of Foodstuffs—A number of foodstuffs were examined in this work for the vitamin B (complex), pigeons being the experimental animals. The criterion of vitamin B value was the maintenance of growth for a period of at least 26 weeks. Work has been reported in which the standard for comparison was the hatching and rearing of young which it is

found required a greater amount of vitamin B than for maintenance. The foodstuffs tested were split peas, whole dried green peas, lentils, haricot beans, soya beans, peanuts, almonds ground and whole, hazel nuts, chestnuts, cocoanut, and coffee. Taking as 100 the vitamin B value of 4 per cent of dried yeast to maintain growth for 26 weeks or longer, the various foodstuffs tested ranged by comparison from 20 in the case of peanuts and hazel nuts to 0 in the case of cocoanut and roasted coffee. Green coffee compares favorably with soya beans, lentils, and peas, a comparative value of 13. The remaining products have a value of 10 on this scale. The authors state that at present it is not possible to differentiate the vitamin B complex into its two factors and the results are considered as due to the combination.—R. H. A. Plimmer, W. H. Raymond, and J. Lowndes, *Biochem. J.*, 23: 546, 1929.

Nuts as a Possible Source of Escherichia Coli Found in Candy—Since *E. coli* is used as an indicator of fecal contamination it was deemed worth while to investigate the question of whether nuts might be an indirect source of *E. coli* sometimes found in candy. All the samples were secured in paper boxes or in paper bags as commonly dispensed in the market. Nuts were obtained from a wholesale distributor and from small retail shops.

The presence of *E. coli* was determined by gas and acid production in lactose broth followed by confirmation on Endo medium. The organisms were subsequently identified by further cultural tests. From the wholesale manufacturer of candy 200 samples comprising 10 varieties of nuts were obtained. The colon group, including all aerobic Gram-negative rods producing red colonies on Endo agar and fermenting lactose broth with 10 per cent or more of gas, was found 23 times, or on 11 per cent of the samples. When the members of the colon group were identified, only 4 met the requirements for *E. coli* or *E. communior*, giving a percentage of 2, or essentially the same as was found on previous examinations of candy. Four hundred nuts from retail shops were examined. The colon group was found 86 times, or on 21 per cent of the samples, being twice as prevalent as in the samples from the wholesale store. Only 2 cultures proved to be *E. coli* or *E. communior*, giving a percentage of 0.5. This figure is lower than that found previously from candy and does not support the surmise that the nuts used in certain types of candies are largely responsible for the *E. coli* found. The figures obtained seem to indicate that the *E. coli* found on either candy or nuts comes from the hands of the vendors.—John Weinzirl, *Am. J. Hyg.*, 10: 265 (July), 1929.

Two Outbreaks of Food Poisoning Probably Due to B. Cloacae—During a period of a year and a half, 3 outbreaks of food poisoning, involving a small number of persons in each instance, were reported to the Division of Health of Cleveland. Epidemiologic investigations showed that in each outbreak the food common to all persons was custard puffs from one large bakery concern. The rapid onset of symptoms indicated that the illnesses were intoxications and not infections. Laboratory examination of cream puffs obtained from the houses where illnesses had occurred and of unsold puffs returned to the bakery showed varying results, some being heavily contaminated, some moderately, and others almost sterile. Plate counts of the puffs of the infected lot showed that some contained as many as 68,000,000 bacteria per gm., whereas fresh puffs from 7 other bakeries had counts ranging from 2,000 to 74,000 per gm. No bacteria of the Salmonella group, which are commonly accepted as true food poisoning organisms, were iso-

lated. The flora of the suspected custard puffs consisted of *B. aerogenes* in large numbers, very few *B. coli, sarcina* and many *B. cloacae*. Anaerobic cultures made after heating the stored custard showed no growth. Sterile filtrates of cultures of the organism designated as *B. cloacae*, which was not exactly typical in that it was a slow lactose fermenter and was at first thought to be *B. proteus*, were injected intravenously into rabbits causing marked diarrhea, severe prostration and, in some cases, death. The presence of *B. cloacae* in the food and the demonstration of the ability of this organism to produce thermostabile toxins made it a fairly clear case of poisoning due to this organism. The absence of the usual fecal flora in the puffs together with certain bacteriological findings in and about the cooking room indicated that the ordinary food poisoning group organisms were not involved.

An investigation was made to ascertain why certain batches of custard prepared at this bakery were in good bacteriological condition and caused no illness while other batches contained large numbers of toxic organisms. A chain of circumstances was disclosed involving the practice of placing pans containing the suspected custard on wet floors contaminated with dirt which entered through nearby ventilators, the soiling of the baker's hands from the bottoms of these pans and the use of the unclean hands for scraping the custard from one pan to another. Filtrates of a culture of *B. cloacae* obtained from a ventilator were injected intravenously into rabbits causing symptoms similar to those produced by filtrates from *B. cloacae* cultures from suspected cream puffs. From the epidemiological and experimental data reported showing that an organism of the *cloacae* type was present and members of the paratyphoid group were absent in these outbreaks and that cultures of the organism obtained from the food produced a substance toxic for rabbits, it is concluded that *B. cloacae* was the probable cause of these outbreaks.—Enos B. Buchanan and Emerson Megrail, *J. Infect. Dis.*, 44: 235 (Mar.), 1929.

PUBLIC HEALTH NURSING

EVA F. MACDOUGALL, R. N.*

Milwaukee Next—On June 9, 1930, the biennial convention of the 3 national nursing organizations in this country will open its sessions at the auditorium in Milwaukee, Wis. These 3 organizations are the American Nurses' Association, the National League of Nursing Education and the National Organization for Public Health Nursing.

The Mental Hygiene Section of the biennial promises to be one of the most interesting. Section officers are tabulating answers to questionnaires sent out to state presidents and to state boards of nurse examiners as to the situation in regard to the education of nurses in mental hygiene and psychiatric work.

The mental hygiene program will be especially interesting also, because it follows so closely the First International Congress on Mental Hygiene which will be held in Washington, D. C., May 5–10, 1930. Here will be discussed the relation of mental hygiene to law, hospitals, education, industry, social work,

* Please send printed matter or other material relating to public health nursing to Eva F. MacDougall, 126 State House Annex, Indianapolis, Ind.

delinquency, parenthood and community problems.—*Bull.*, American Nurses' Association, Oct., 1929.

Vacations and Sick Leaves for Public Health Nurses—In answer to a questionnaire sent out by the statistician of the National Organization for Public Health Nursing to 73 health departments, 72 per cent stated that the yearly vacation given to their nurses was two weeks. Of the 99 public health nursing associations questioned, all but 7 per cent stated that one month was the vacation time given their nurses.

The most frequent length of time allowed nurses in a year for sick leave with full pay by health departments, school boards and public health nursing associations was found to be 2 weeks.

Out of 128 boards of education employing nurses, 63 per cent of these in cities of 100,000 or more population require their nurses to work on Saturdays. Only 20 per cent of the boards in cities under 100,000 require their nurses to work on Saturdays.—Louise Tattershall, Pertinent Facts Relative to Salaries of Public Health Nurses, *Pub. Health Nurse*, V, XXXI: 444–445 (Aug.), 502–503 (Sept.), 1929.

(NOTE: Further reports of the results of Miss Tattershall's studies along this line will be published in other issues of *The Public Health Nurse*.)

Hygeia Helps the Public Health Nurses—In the November, 1928, issue of *Hygeia*[1] there was a health-score outline for teachers which was worked out by the Committee on Hygiene and Physical Education of the Massachusetts Federation of Teachers' Clubs. This score was divided into two sections: I. *Signs of Health*, under which there were 17 items, and II. *Health Habits*, with 24 items.

Several public health nurses in Indiana used this score to good advantage at the beginning and end of their hygiene classes in high school, to measure the improvement in health habits and health of their students during the school year.

One school nurse who was asked to talk before the Lion's Club at a noon luncheon made mimeographed copies of the score and distributed them to the men, who scored themselves at the meeting and were very enthusiastic about it.

Another public health nurse distributed the score sheets at a Parent-Teacher Meeting and created a very deep interest in everyone present. There was great surprise that a visit to the dentist twice a year counted 40 and a thorough physical examination once a year counted 50 towards the whole possible score of 530.

In the October, 1929,[2] issue of *Hygeia* there is a score outline for the home in regard to sanitation, communicable disease control, child hygiene and health education. And this, too, ought to be widely used by the public health nurses in interpreting the health needs of the household in a practical and interesting way to either individuals or groups.

REFERENCES

1. Andress, J. Mace, Health and the School Section, *Hygeia*, 651 (Nov.), 1928.
2. Lane, Edward A., Scoring Your Domestic Health Service, *Hygeia*, 993 (Oct.), 1929.

County Nurses and the Conveyance of Patients—Nannie J. Minor, R.N., Director of Public Health Nursing for the Bureau of Child Health, Virginia State Board of Health, has been making a study in her state as to how much time and money the county public health nurses are spending in the conveyance of patients to sanatoriums and hospitals. She states in her questionnaire sent out to the nurses, "We are seeking for information, with a desire to clarify as far as possible the multiplicity of duties which are constantly being heaped upon the health worker and which could be done just as well by other people." Forty-six nurses replied. The questions which applied only to the past 6 months are given below with their answers:

1. How many times have you personally conveyed a patient to a sanatorium in your car?

37 replied no patients
1 " 1 "
3 " 2 "
1 " 5 "
1 " many times

2. How many times have you personally conveyed a patient to a hospital?

14 replied no patients
11 " 1 "
2 " 2 "
2 " 3 "
4 " 4 "
1 " 5 "
1 " 9 "
1 " 10 "
1 " 11 "
1 " 12 "
1 " 50 "
1 " 130 " or an average of 5 or 6 a week
1 " 288 " to clinics
1 " many times
1 " 2 patients—taken on train
1 " 1 patient—taken on train
2 " not clear, as only in an emergency

3. If it means some distance, why is the car preferred over the train?

20 did not reply
7 said patients taken if the distances were short
1 reported poor train service
3 reported when patient was very ill there were no funds
3 stated distances longer by train
6 stated no train service was available
2 stated less time and less expense
3 stated several patients could go at once at less expense and greater comfort
1 stated train was always used

4. What has been the approximate expense of such trips and about how much time was consumed by the worker?

28 did not reply
The remaining 18 varied from 75¢ to $10.00
23 did not reply as to the amount of time spent
The remaining 23 gave time from ½ hour to 32 hours

5. Why was it necessary for the health worker to accompany the patient?

22 did not reply
The answers of the remaining 24 are rather interesting
1 stated "part of my work"
4 stated "friends and relatives do not understand how to manage nor how to get reduced rates at the hospital"
1 replied "information health worker can supply"
2 replied doctor requests nurse to go
7 replied no other person available
9 replied patients dangerously ill—no funds available

6. Do you think that such activities have any place in your work?

28 stated that frequently it helped popularize the work
15 replied "no"
3 failed to reply

The study does not show how many of these visits were repeated for the same patients. Many nurses make it a rule to take the patient to the hospital or sanatorium or clinic, as the case may be, for the first time in order to answer questions about his history and social conditions, and this often aids greatly in the solution of his problems and in his improvement or final recovery. She in turn can convey the information and the advice given at the hospital or sanatorium or clinic to the patient's physician and family at home. In emergency cases she is often the only one available for quick action—here mobilization of volunteers might cause dangerous delay. But to accompany chronic patients week after week to hospitals for treatment, surely wastes a nurse's valuable time and she ought to make some arrangement for volunteers to do it.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN*

The Harmon Awards Next—The most important opportunity this season for recognition of good health education publicity is offered through the Harmon Foundation awards for a Year's Publicity Record—$100 each is offered for the best record submitted by a national agency, a state or regional agency, a city or county agency of 200,000 or more population, and a city or county agency—under 200,000 population.

The conditions are simple. The making of such a record should be extremely valuable to any alert health agency—well worth while even though the prize is not won. We hope that all health agency entries can be exhibited at the 1930 meeting of the A. P. H. A. The Harmon Foundation, 140 Nassau Street, New York, N. Y., will gladly send the conditions. Will you ask for copies to be mailed to all health organizations in your city, county or state? Nationals are invited to distribute copies and to urge their local groups to enter the contest.

Local and State Health Education Councils—Why not get together locally and in connection with state health and social work conferences? Four or five local luncheon or dinner sessions this season, and a session or two at the next state meeting, should do much in boosting interest and effectiveness in public health education. Merely to talk over whatever anyone in the group has on his mind would be worth while. Submit copies of your material for informal comment. Invite the presence of a printer or a newspaper man and ask him questions about your material. Set up any one of scores of questions on problems and see what the group has to contribute. Appoint a chairman and a secretary to plan and call the next meeting.

What group will announce that they are getting together?

The Yard Stick—

To ascertain the "subject matter" for publicity work in a health department I have drawn up a guide based on the appraisal form of the American Public Health Association. After keeping in close touch with department heads for more than a year to make the publicity keep in step with their activities and perhaps get out in front once in a while and stir things up for them, I found that department activities aimed to make up shortcomings pointed out in local health work when the appraisal form yardstick was applied to our program. Consequently, to find the "subject matter" for publicity it was only necessary to set aside activities in which points were lost in getting our rating. For instance—we lost 11 points because not enough pre-school children visited clinics. Therefore, more publicity for pre-school clinics. We lost 4 points because of lack of nutrition work. Therefore, more publicity for nutrition work. Good copy is available because the publicity man knows the health department's program is in step with his own.

—George A. Dundon, Director of Health Education, Health Department, Milwaukee, Wis.

EXHIBITS

Practical suggestions for taking part in the fair are continued in these articles: "Babies Rest at the Fair," "First Aid Tent," "Some Suggestions for Health Exhibits," "During a Community Chest Drive," "What Not to Do in County Fair Exhibits." *Pub. Health Nurse.* Aug., 1929.

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

"The Diphtheria Prevention Commission has prepared twelve attractive panels as a technical exhibit on the prevention of diphtheria. This set is intended primarily for health officers in showing the way to a coördinated community campaign to wipe out diphtheria. Each panel is 32 by 43 inches. The backgrounds are appropriate designs on which are superimposed the forms used by the Commission in its work in New York." Application for the loan of the exhibit may be made through Edward Fisher Brown, Director, Diphtheria Prevention Commission, 505 Pearl Street, New York, N. Y.

A health exhibit won a first prize of $100.00 at the Tompkins County, N. Y., Fair, and will be shown at the county fairs in the state. Planned by Nina V. Short of the staff of Tuberculosis and Health Committee, S. C. A. A., the exhibit was designed to present the county health department services. The exhibit shows in miniature the court house and clinics, with an attractively painted background.

The historical exhibit at the recent National Tuberculosis Association exhibit, Atlantic City, N. J., suggests possibilities for other groups. The "antique" publicity section might be worked out in connection with the 1930 meeting of the A. P. H. A. It would help to show progress made in educational materials.

"How Pasteurization Safeguards Your Milk Supply"—*N. E. Journal of Medicine.* Jan. 24, 1929. *Monthly Bulletin,* Board of Health, Fall River, Mass. July, 1929. Issued as a leaflet by Mass. Dept. of Public Health. *Free.* Effective thermometer diagram—good for exhibits and printed matter—with text answering "What Is Pasteurized Milk?"

Models of two houses in neighboring lots represented "the house of good health" and "the house of ill health." The house of good health was shown on a plot with a green lawn, split peas being used for grass. The foundations of the house were made of zwieback, the material of the walls and chimney were layer-figs, the roof, graham crackers, awnings were of orange peel, the doorstep and the walk of triscuit. Trees were of celery in a tomato setting, the stiff shrubbery was represented by carrots and the children on the grounds were made of dates. The house of ill health appeared set in a grass plot of coffee giving the appearance of a drought. The garden walls were of lump sugar, and the house itself was of coffee stucco. A granulated sugar walk and cake steps led to it. The children were made of various kinds of highly colored candies.

—*Health News,* N. Y. State Dept. of Health. July 8, 1929. This exhibit was recently prepared for the Health Dept., Glens Falls, N. Y. A well-done revival of an idea in use for several years. Its educational value depends upon the talk by a good explainer who will make obvious the difference in the food values in the materials used in the two houses. Standing alone, will the exhibit be much more than a curiosity?

Pictures of a "Health House" exhibit at the Rochester Exposition appear in *Bulletin,* Tuberculosis and Health Association, 35 Chestnut St., Rochester, N. Y., July, 1929. *Free.* The barker invites visitors in with

Come on, folks, right this way to Healthy House. Everything free. Won't cost you a cent. Everybody Healthy—that's what we want—step right in. See the poor little white rat that never drank any milk. See the three bears who sleep in their own separate beds, eat hot cereal and walk every day in the open air just as Goldilocks discovered them. Get a ticket for the anti-toxin express train for No Diphtheria Town. Have the baby weighed—yes, we have pretty nurses who weigh all the babies under six. . . .

"Popularizing Prenatal Education," by Helen Albano. *Trained Nurse and Hospital Review.* June 29, 1929. Pp. 789–791. Describes in detail a department store demonstration of home confinement. Diagrams and pictures show the arrangement of objects in the demonstration space.

HEALTH SUPERSTITIONS

"Folk Doctoring." *Public Health*, Central Board of Health, Kingston, Jamaica. Aug., 1929. "Did he ever kick the cat? That's one of the causes for joint rheumatism."

"Toothache's Place in History." *Sunday World Magazine*, New York. Sept. 1, 1929. *10 cents.* Charms, whiskey, apples and other "cures."

Ancient and modern health superstitions should make good copy for the Sunday newspaper. And there are plenty of them now current.

NEWSPAPERS

In the 1929 "Feature Story Contest" of the Social Work Publicity Council a first prize was awarded Dwight Anderson, National Tuberculosis Association, for his story, "Roentgen Ray Lights Way in War on Plague." Said the committee: "This story is historically and scientifically informative and yet retains the breeziness and crispness of expression so essential to successful newspaper work."

The award of a medal to Dr. Ernest Fuchs, of Vienna, was used as the lead of a press release to announce the reelection of a president of the National Society for the Prevention of Blindness—the latter event in itself not of widespread newspaper interest. Released July 29, 1929. *Free.*

"Questionnaires as a News Source" quotes the publicity department of the National Board, Y. W. C. A., on questionnaires as supplying material for news copy which can be given an educational slant. See *News Bulletin*, Social Work Publicity Council, 130 East 22d St., New York, N. Y., Sept., 1929.

Questions about health habits, health beliefs, what people know about health departments or other health agencies, reading on health topics, and so on, can be handled by mail, at meetings, with individuals, and among special groups. As a rule statements of results will be welcomed by editors and appeal to many newspaper readers who would not be attracted by paragraphs discussing the unadorned subject matter.

Attendance figures at Massachusetts state cancer clinics, as discussed by *New Bedford Standard*, show that

> in the state as a whole 45.2 per cent of those who reported to a clinic were led to do so by what they had read in the papers. . . . In New Bedford the percentages for newspapers, doctors and friends were 56.8, 21.1 and 12.1, respectively. . . . In New Bedford 22.5 per cent of those attending were found to be suffering with cancer. . . . If they are cured, the clinic has accomplished a wonderful thing, and in bringing this about intelligent newspaper publicity has been an important factor.

"Annual Directory of Features," in *Editor and Publisher*, Times Bldg., New York, N. Y., Aug. 31. *10 cents.* Lists features supplied by syndicates to newspapers, feature and picture syndicates, news services, photographic services, mat and cut services, syndicate writers and artists.

"Health columns" supplied by newspaper syndicates are written by the following: Dr. M. Schuman, Dr. Lulu Hunt Peters, Dr. Frank McCoy, Dr. Logan Clendening, Dr. W. A. Evans, Dr. Morris Fishbein, Josephine Huddleston, Bernarr Macfadden, Dr. Herman Bundesen, Dr. McCoy, P. J. Veatch, Dr. Royal S. Copeland, Leon F. Whitney.

TO CATCH THE EYE

Distinction can be given to mail by the use of large postage stamps. The following two-cent stamps can be bought through Philatelic Agency, City Post Office, Washington, D. C.:

Valley Forge (1928)

Aeronautic Conference (1928)

Burgoyne Campaign—Saratoga (1927)

The Burgoyne stamp is small, but unusual. Two-cent Sesquicentennial envelopes in 3 sizes are quite different from the usual ones. *Send for order blank.* But try your local post office first.

An example from the colored picture map on cover of "Radburn Garden Homes" may suggest use of a similar graphic device to indicate the location of a health activity, the community served, etc. This particular pamphlet describes "a new safety street plan" and other ideas on new housing developments. City Housing Corporation, 18 East 48th St., New York, N. Y. *Free.*

"Just What Is a Poster Anyway?"—A poster is to the eye what a rallying cry is to the ear. It is to sight what a crusader's slogan is to sound. A poster has something to say, and says it hard. It has no patience with negative virtues. Its aim is to get things done. It runs on a single-track line of thought. Through the eye of the beholder, its singleness of purpose and its sincerity must be instantly and wholly comprehended.

—From "How to Make a Poster," in *"Seeing Is Believing."* American Child Health Association, 370 Seventh Ave., New York, N. Y.

WHAT WE FOUND IN SOME HEALTH BULLETINS

"A Dental Health Exhibit as a Project in Health Education" is described by Pearl E. Wilson, R.N., director dental health education, State Department of Public Health, Oklahoma, in *The Public Health Nurse* for September, 1929.

"Health Education in Teachers' Training Schools" is a report on a five-year study at the New York Training School for Teachers by Iago Galdston, M.D., secretary, health education service, New York Tuberculosis and Health Association, New York, N. Y. It contains an outline of the curriculum of health education course given at New York Training School for Teachers. Copies may be ordered at 50 cents each from New York Tuberculosis and Health Association, 244 Madison Avenue, New York, N. Y.

Wanted, an Author—"Who will be the Emily Post of Public Health?" The U. S. Public Health Service has coined the term "Sanitary Etiquette" and suggests that somebody write a book about it, called "The Hygiene of Etiquette," to teach prophylactic measures and practical hygiene as well as social courtesy. Some of the unhygienic indiscretions to be barred by the contemplated volume are coughing and sneezing without protecting the mouth, indiscriminate kissing, insistence upon hand shaking, blowing the nose on a soiled handkerchief, later used for other purposes; moistening various articles, such as money, books, tickets, etc., with saliva are also deprecated.

—*Clip Sheet,* N. J. Tuberculosis League, Inc., 21 Walnut St., Newark, N. J.

We think this is good—A radio talk that is easy to listen to is quoted below: "When you or some one in your family wakes up in the night with a terrific pain in the stomach, a high fever, a sudden chill or something else and you want a physician badly, it is comforting to realize that you have a family doctor. You ring him up on the 'phone, perhaps you call him by his first name, and very shortly he is at your side. With his entrance into your home there is immediately a sense of relief because you know and have confidence in your doctor. Besides this he knows from previous visits in the home the health and sickness background of each member. The doctor quickly sizes up the present situation and takes command and you follow confidently his advice and instructions.

"Picture, if you will, this same urgent need in a family that has no regular doctor. The first question to decide is who to call. Should it be a stomach specialist, a throat specialist, a surgeon or a general medical man? When this is decided upon the telephone is put to use. The responses may be varied but often unsatisfactory. 'I go out at night only for my regular families.' 'I limit my work to nose and throat work,' or, 'I am just going out on another case; try Dr. Blank.' Finally you are successful in getting someone to respond to your appeal and he arrives, a stranger in the home. You look him over and are not quite sure just how much confidence you

should place in him and he is sizing up the situation to see whether he is likely to get paid for being pulled out of bed. The physician has to ask a lot of questions to get the history of the case and then he proceeds to his examination, an unknown doctor for an unknown patient. He may recommend immediate hospitalization, an operation, or come to the conclusion that a cathartic is all that is necessary. You probably follow his advice no matter what it is but you cannot help but feel a little uneasy about the matter.

"Every family that can afford it should have a regular physician. This physician should see the family every year whether there is sickness or not. He should be asked to do physical examinations on everyone annually and give proper advice for the prevention of disease and the care of defects. Occasionally one hears the remark, 'We haven't had a doctor in our house for five years and wouldn't know who to call if there was sickness.'

"As a rule families have their own grocer, banker, and spiritual adviser, etc., but too frequently the family physician is neither chosen nor made use of until late in the contest between health and sickness."—Have You a Family Doctor? in *Health*, published by the New Haven Department of Health. July, 1929.

Sometimes we enclose a printed card with reports and other special publications when sent to certain lists. As an inexpensive substitute for the printed card Bellevue-Yorkville Health Demonstration has used a stock 3 x 5 card on which was multigraphed "With Compliments" followed by the name and address in the center, and the name and title of the executive at the lower right corner—the Demonstration title and executive's name all in caps.

"The Attention-Getting Phrase in Your News Lead" (*News Bulletin*, Social Work Publicity Council, June, 1929) quotes from Dwight Anderson a list of phrases for the opening sentence, the "lead," of newspaper stories, accompanied by the news element out of which each phrase grows. Examples: "Aroused by—," "Seeking to avert—," "To ascertain why—," "Final action on—." A valuable list for desk use.

"Which Way Publicity?"—This question is raised in a lively fashion—and answered with a bang by Leigh M. Hodges. *Survey*, 112 East 19th St., New York, N. Y. July 15, 1929. *25 cents.* Although addressed to child welfare agencies its sharp thrusts will pierce the armor of all but the hopelessly self-satisfied, and unwilling-to-learn health workers.

REQUEST FROM LONDON

The following comes from T. Crew, organizing secretary, Central Council for Health Education, 1 Upper Montague Street, Russell Square, London, W. C. 1, England:

> The Central Council is coördinating the various health associations in this country and also preparing a Museum of Health Propaganda in order to be of service to the medical officers of health and others engaged in public health services, etc.
>
> The Council would be glad if you can kindly supply them with any health posters and health leaflets, etc., for display in our Museum.

IN THE MAGAZINES

"Eat, Drink, but be Wary," by R. S. Copeland, M.D. *Collier's*, July 13, 1929. Germs and refrigeration.

"Get a Mouthful of This," by Ruth F. Wadsworth, M.D. *Collier's*, Sept. 28, 1929. Tooth decay: Why? Why not?

"Mechanized Medicine." Editorial. *Sat. Eve. Post*, Sept. 7, 1929.

"Vitamins in Margarines," by E. E. Slosson. *Collier's*, Aug. 24, 1929.

BOOKS AND REPORTS

A History of the Medical Department of the United States Army—*By P. M. Ashburn, Colonel, Medical Corps, U. S. A. Boston: Houghton Mifflin,* 1929. 448 pp. Price, $5.00.

Every present and former member of the Medical Department of the U. S. Army ought to read this book, which is the first comprehensive and satisfactory history of this extremely important branch of our military forces. Officers of the active services and of the organized reserves ought to receive credit for doing so, not because the book is hard reading, for, though lengthy, it is the reverse. The struggles and vicissitudes, the achievements and triumphs of our medical soldiers, as described and occasionally commented upon by Colonel Ashburn, who is exceptionally well qualified for this task, are always interesting and frequently entertaining and instructive.

The story begins with the hectic days of 1775 and spans the whole career of the service up to 1928. The first part, dealing with the period before the Spanish-American War, is, of course, compiled entirely from available records and so lacks some of the verve of the later sections, such as those on the World War, when the author could draw for his facts on personal experiences as well as authentic records. While the book gains momentum as it progresses, this is no disparagement of the earlier parts.

The account is an impartial one, with no attempt to gloss over some of the less creditable incidents in the history of the Medical Department, such as the lack of preparation and of efficiency in the early years of the Civil War and more or less throughout the Spanish-American conflict. At times some of the quotations from old documents seem a little prolix, and the informed reader will not always agree with the author's evaluation of personalities and events. Members of the Sanitary Corps will also be disappointed at finding so little about this branch of the department which rendered such valuable service during the World War.

Despite these minor defects, if they are shortcomings, this well-printed book is a notable contribution to medico-military literature. It fulfills a real need and deserves a wide circulation. There is an introduction by Surgeon General M. W. Ireland and a number of useful appendices, including a well-merited appreciation of Surgeon General Ireland, contributed by General Pershing.

JAMES A. TOBEY

The Child's Heredity—*By Paul Popenoe. Baltimore: Williams & Wilkins,* 1929. 316 pp. Price, $2.00.

The author has the happy faculty of making this rather heavy subject interesting and at times even entertaining, not only by choosing good material and language but also, when perhaps his reader may be a bit weary, by telling him that: "Some youths have asserted that all blondes are fickle and all brunettes inconsistent. It is not a given type of complexion, however, but sudden change from one type to the other, that is properly to be considered as an evidence of instability." Other illustrations *are* apropos and not simply amusing.

The author, we think, must possess an ancestry of several millions—or less—of generations of Presbyterians, so strong does his belief in predestination and the inevitability of results from given forebears appear; yet we imagine that had he been employed as counsel

by the proponents of environment as the dominant factor in child development, he could and would have found enough variables to leave his readers, who have but mediocre prospects from heredity, some hope through training.

Parents will find this book a good one to add to their general cultural knowledge and we trust that many will read it, but the preface says: "This is a guide book for parents. Their interests and practical needs have determined the selection, the arrangement and the treatment of the material," and yet about all the "guidance" we find is contained in nearly the last line where the author says: "The greatest opportunity a man ever has to exercise this choice [of conditions favoring race evolution] is in the selection of a set of genes to add to his own for the creation of children."

The book contains good reliable material well arranged and is an excellent presentation of the subject from the angle of major emphasis on hereditary influence. W. D. LUDLUM

Health Science and Health Education for College Students and Teachers in Training—*By W. Alfred Buice. New York: Wiley,* 1929. 344 pp. Price, $3.00.

This is an effort to combine personal and community hygiene. The book is divided into four parts—part I dealing with preventable diseases and how they may be prevented; part II with personal hygiene and efficiency, including a chapter on reproduction and sex hygiene; part III relating to such community health factors as milk safety, child conservation, public health administration, and the public school health program; part IV is made up of projects and exercises for class use, and of first aid exercises. There is also an appendix on nutrition, offering standard dietaries for persons of different weights and activities, and fattening diets for those needing them.

Part IV offers a wealth of project material and suggestions which teachers in training may use later in their own teaching.

The text is designed for the use of college students and teachers in training. The material is well organized, sufficiently illustrated, and clearly stated. Supplemented by the projects and exercises of Part IV, this work makes an excellent text for the designated group. A worth while book in a field, particularly as regards teachers in training, that needs emphasis. C. H. KEENE

The New Healthy Living—*By Charles-Edward Amory Winslow, Dr.P.H., and Mary L. Hahn. New York: Merrill,* 1929. Book I. Price, $.84. Book II, 438 pp. Price, $1.00.

In Training for Health—*By C. E. Turner, Dr.P.H., and Jeanie M. Pinckney. Boston: Heath,* 1929. 151 pp. Price, $.72.

Science and the Way to Health—*By J. Mace Andress, Ph.D., and Maud A. Brown, M.S. Boston: Ginn & Co.,* 1929. 367 pp. Price, $1.00.

Sanitarians will want to know about this summer crop of school health readers. They will be interested, not so much in the relative merits of each, but in the fact that those most competent to guide the school child's hygienic life are putting themselves to the task of preparing good books.

Of the 4, 2 are for youngsters of about the fourth grade, and the others for boys and girls in the junior high grades. All are written for children who are presumed to have had some health instruction.

Obvious analogies between training for athletic success and training for life, inspirational stories about well-known persons who have achieved the healthy life despite a poor start, interesting tales of "microbe hunters," and curiosity-stimulating accounts of our internal processes all go to make the books good,

as well as helpful reading for the youngsters.

To a reviewer old enough to have suffered under the old régime of so-called health teaching, yet not so old as to have forgotten the deadly dull physiologies of his own school days, the perusal of this series of health readers is indeed a pleasant assignment. Vivid still are the memories of the 208 dry bones whose fiendish names had to be learned by rote. I can still see myself standing limply in the aisle reciting with utter boredom, ". . . and the bones of the arm are the femur and the ulna . . ." and so on *ad nauseam*. The memory of the names and uses of the countless muscles happily is clouded by the merciful mists of forgetfulness.

R. S. PATTERSON

Readings in Public Opinion. Its Formation and Control—*Edited by W. Brooke Graves, Ph.D. New York: Appleton,* 1928. 1281 pp. Ill. Price, $6.00.

The editor, professor of political science in Temple University, has accomplished a colossal piece of work; i.e., compiled a volume of nearly 200 essays and discussions on the various subjects that are related to the formation and control of public opinion.

In his introduction to the volume, Clyde L. King, Ph.D., professor of political science, University of Pennsylvania, takes up the importance of public opinion and its distinguishing elements.

The first section of the book is more or less analytic, for the editor has grouped contributions dealing with the formation of public opinion, the rôle of discussion in its formation, the nature of group opinion as contrasted with general public opinion, the scope of public opinion, how it is influenced by environmental and hereditary conditions and its power in the community.

According to the editor's analysis, as brought out in his plan of presentation, there are certain established social institutions which influence public opinion. They are all familiar to the reader—the school, church, press, theatre and motion pictures, art, literature, music, the radio, and oratory—and here he especially deals with the Chautauqua.

The private organizations that influence public opinion are the public relations counsel, chambers of commerce, corporations and organized labor, trade associations and civic and improvement associations. One chapter is devoted to racial influences.

Then there is the governmental influence—the appeal of the reformer, the demagogue, the leader and the political party and legislation leadership. Included in this volume are articles dealing with lobbying, freedom of speech, censorship, the administration of justice, international public opinion and public opinion in war time.

This volume is a valuable aid to the publicist or the student of human behavior. Although it was probably not compiled with the idea of offering a textbook on the subject, the author has placed at the end of each section topics for further investigation and discussion.

Two indexes—author and subject—are also commendable features of the book. It is sparsely illustrated with cartoons.

This is an excellent volume to have handy on the bookshelf for reference and ideas. ANNE TOWSE

Outline of Preventive Medicine. *For Medical Practitioners and Students. Prepared under the Auspices of The Committee on Public Health Relations, New York Academy of Medicine. 21 Contributors. Editorial Committee: Frederic E. Sondern, Chas. Gordon Heyd, and E. H. L. Corwin. New York: Hoeber,* 1929. 398 pp. Price, $5.00.

This book can at least claim to have been written on a different plan from

other works on preventive medicine. Whether or not it is a good one is open to considerable question. Instead of beginning, as most books on the subject do, with some description of the formation and functions of the body, it goes at once into "The Periodic Health Examination," and then one by one, different specialties, such as obstetrics, pediatrics, dermatology, etc., are discussed by specialists in each particular line.

Written as it is by 21 different authors, it has some of the faults inherent in such productions. In the section on General Medicine, for example, we find no mention of the Dicks' work on scarlet fever, of the recent discoveries in regard to yellow fever, nor of the work of Birkhaug on the particular streptococcus which causes erysipelas, though the leucocytic extract of Hiss is mentioned. The other sections of the book do not entirely make up for these omissions, though the Dick Test as well as the use of streptococcus toxin for immunization is mentioned in the section on pediatrics.

The chapters are each well written, and contain a fund of useful information, though practically all of them presuppose some knowledge on the part of the reader. We believe that the omission of fundamentals detracts from the general value of the book, which is otherwise of high quality.

The printing and make-up of the book are excellent. M. P. RAVENEL

Chemistry of Daily Life—*By Samuel Glasstone. New York: Dutton,* 1928. 250 pp. 21 diagrams. Price, $2.25.

This book is the result of a course of extension lectures given at Plymouth under the auspices of the Education Authority and of the University College of the South-West, Exeter, and of a series of radio talks by the author on the same subject. It is intended for the general reader, and to serve as a basis for extension and similar lectures as well as a textbook for schools whether chemistry is taught or not.

Twenty-two chapters and an index cover 250 well-printed pages, dealing with such subjects as the history of chemistry, structure of matter, air, water, carbon, burning and breathing, flame and explosion, foods, catalysis and enzymes, plants and soils, fuels, metals and alloys, the laboratory in reference to synthesis of dyes, medicines and perfumes, and artificial foods and clothing.

A very valuable feature of the book is the list of questions, suggestions and references to literature that follows each chapter. By the use of this list even the general reader can be led into a definite and systematic study of chemistry.

The beginning student would profit by a more definite consideration of the chemical equation together with the inclusion of a few pages with reference to chemical calculations. An equation, whether chemical or otherwise, is something of a mystery to the initiate; so a little assistance in this regard would go a long way. But this item aside, the book under consideration is one of the best of its kind. C. F. ADAMS

Home Care of the Sick—*By Norma Selbert, R.N. Philadelphia: Saunders,* 1929. Price, $1.00.

Based on a wide experience as a nurse, an extension lecturer and a teacher of public health, the author has given us an excellent book of practical instruction in non-technical language suitable for use in every home. The author's duties have taken her into homes of all kinds, from those of the rich city dweller to those living in remote agricultural districts. She is therefore exceptionally well fitted to judge of what is needed and has given this in a concise and readily available form. She has covered the ground in an excellent fashion.

M. P. RAVENEL

Sunrays and Health—*By Ronald Millar in collaboration with Dr. E. E. Free. New York: McBride,* 1929. 125 pp. Price, $1.50.

The rays of the sun are at last enjoying the popularity of a best seller. They have become the fashion. Clothing designers having put the seal of approval upon them they have a recognized standing. Old-fashioned people who have always appreciated the sunshine may now feel themselves for once quite in style. Furthermore they may find out the scientific basis for belief in the powers of sunshine by reading the well-written little book called *Sunrays and Health* by Ronald Millar and Dr. E. E. Free.

Part of this book is devoted to a simple explanation of the composition and properties of sunlight and the part that the ultra violet element plays, especially in relation to the human body. The geographical distribution of ultra violet is taken up. We find that a place in the sun in New York City is not of much value from November to April so far as getting one's share of ultra violet is concerned. A useful list of window glass substitutes is quoted with figures indicating the percentage of solar ultra violet these substitutes may be expected to transmit.

The ultra violet lamp, however, seems to be the climax toward which the book works. Evidently the authors consider this a wonder-worker. A note of half-concealed criticism is seen, levelled at the conservative attitude of the American Medical Association for frowning on the advertising of generators of ultra violet energy to the general public. Nevertheless the quotation from an article by the brother of the inventor of the mercury arc lamp, although apparently intended to reassure prospective users of "artificial sunlight," seems on careful reading to be far from reassuring.

For the intelligent reader accustomed to taking all his reading with a grain of salt this little book will prove both informative and entertaining.

MERRILL E. CHAMPION

Laboratory Manual of the Division of Bacteriology, Peking Union Medical College—*Prepared under the direction of D. E. Lim. Peking, China: P. U. M. C. Press,* 1929. Price, $1.50.

From China comes this excellent laboratory guide, printed in English by the College Press. The directions are clearly given, and the book in general is admirably adapted to the purpose for which it is intended.

At the end of each section, the references are given, so that the reader may consult the more complete text.

Two omissions are noted. There is no mention of Ponder's stain for diphtheria bacilli, which, in our experience, is by far the best, especially for direct smears, nor of Dorner's spore stain.

The book is well printed and made up.

M. P. RAVENEL

Selected Readings in Pathology. From Hippocrates to Virchow—*By Esmond R. Long. Baltimore: Charles C. Thomas,* 1929. Price, $4.00.

The author has selected from the literature of the past what he considers some of the most important contributions to the science of pathology. What the original writers said of their work is given in their own words, or as near to them as a good translation can come.

What has been given is beyond criticism, and we believe that the selections have been made with excellent judgment. The author deserves the thanks of students and teachers alike for making this material readily available.

The make-up of the book deserves special mention. It comes from the new publishing house of Charles C. Thomas. It is a beautiful book which

will be an ornament to any library, and its material is of rare interest. The illustrations are numerous and good. A page in the rear gives the story of its making. M. P. RAVENEL

Heredity and Parenthood—*By Samuel C. Schmucker. New York: Macmillan*, 1929. 322 pp. Price, $2.50.

The major portion of this book is devoted to the presentation of the biology of reproduction, from the simplest forms up to and including the mammals. This is expressed simply and demands no previous knowledge of the subject and is appropriate to those interested people who have lacked the opportunity of a high school education or more. The reviewer suspects that the subject has not been adequately covered in all high school or college programs even in the present day.

A few of the later chapters are devoted to the relations of the sexes in childhood, youth and early adult life, and the subject and form of sex education; the author's children, then eleven and nine years old, having received a large slice of instruction in connection with the puppies, born by prearrangement, in the house.

The author is deeply religious, with a God who produces creation by evolution. He believes in ample sex education through biology; in early marriage at the proper physiologic age to avoid the errors of delay. He approves of birth control, and of the wife contributing to the family budget, as may be necessary, for a while after marriage.

Altogether we might call him a "Victorian modernist," with the good traditions of that age, modified by modern science and economic necessity.

The title of the book is a misnomer; heredity—inheritance of characteristics, physical or mental—is barely referred to, and parenthood only in the manner mentioned above.

However, this title may achieve the desired effect of attracting the readers he wants. WALTER D. LUDLUM

BOOKS RECEIVED

MUNICIPAL ORDINANCE MAKING. By Harvey Walker. Columbus: Ohio State University Press, 1929. 207 pp. Price, $3.00.

STERILIZATION FOR HUMAN BETTERMENT. By E. S. Gosney and Paul Popenoe. New York: Macmillan, 1929. 202 pp. Price, $2.00.

PATHOGENIC MICROÖRGANISMS. 9th ed. enl. and rev. By William Hallock Park, Anna Wessels Williams and Charles Krumwiede. Philadelphia: Lea & Febiger, 1929. 819 pp. Price, $6.50.

THE CHEMICAL ASPECTS OF IMMUNITY. 2d ed. enl. and rev. By H. Gideon Wells. New York: Chemical Catalog Co., 1929. 286 pp. Price, $6.00.

THE FUNDAMENTALS OF BACTERIOLOGY. 4th ed. By Charles Bradfield Morrey. Philadelphia: Lea & Febiger, 1929. 347 pp. Price, $3.50.

HUMAN NATURE AND MANAGEMENT. By Ordway Tead. New York: McGraw-Hill, 1929. 312 pp. Price, $3.50.

THE BEHAVIOR OF YOUNG CHILDREN. By Ethel B. Waring and Marguerite Wilker. New York: Scribner, 1929. 121 pp. Price, $1.00.

A NEW WAY TO HEALTH. By Ralph Collier Wright. Boston: Christopher Publishing House, 1929. 131 pp. Price, $1.50.

A STUDY OF MASTURBATION AND THE PSYCHOSEXUAL LIFE. By John F. W. Meagher. 2d ed. New York: Wood, 1929. 130 pp. Price, $2.00.

APPLIED ELECTROCARDIOGRAPHY. By A. E. Parsonnet and A. S. Hyman. New York: Macmillan, 1929. 206 pp. Price, $4.00.

MEDICAL INFORMATION IN SICKNESS AND HEALTH. By Philip Skrainka. New York: Coward-McCann, 1929. 577 pp. Price, $7.50.

SOME METHODS FOR THE PREVENTION OF TUBERCULOSIS. By W. Bolton Tomson. New York: Wood, 1929. 148 pp. Price, $2.50.

AIDS TO ZOOLOGY. By Harry Lister. New York: Wood, 1929. 214 pp. Price, $1.50.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH. D.

Possibilities in Life Conservation—Causes of death grouped by age and sex are shown graphically and the presentation is used as a basis for a discussion of possible preventive measures.

ANON. Where Can Lives Be Saved? Weekly Bull. (New York City Dept. of Health), 18, 34: 265 (Aug.), 1929.

Postvaccinal Encephalitis—Briefly summarizing the prevailing opinion in regard to the possible causes of postvaccinal encephalitis. The preventive measures suggested are avoidance of vaccination in areas where polio and encephalitis are present, use of "American" method of vaccination, and vaccinating during the first year of life.

ARMSTRONG, C. Postvaccinal Encephalitis, Pub. Health Rep., 44, 34: 2041 (Aug. 23), 1929.

Measles Prophylaxis—Another report of the benefits derived from the use of convalescent blood as a preventive of measles.

BADER, G. B. The Intramuscular Injection of Adult Whole Blood as Prophylactic Against Measles. J. A. M. A., 93, 9: 668 (Aug. 31), 1929.

When is an Epidemic?—This delightful dissertation on the relative merits of knowing what to do and how to make the public believe you are doing the right thing discusses methods of obtaining accurate records during epidemics.

BIGELOW, G. H., and LOMBARD, H. L. Respiratory Tract Infections in Massachusetts in the Winter of 1928–29. New England J. Med., 201, 10: 474 (Sept. 5), 1929.

Cancer in Public Health—This discussion of the possibilities of official participation in cancer control recounts again the pioneering work of Massachusetts in this field.

EWING, J. Cancer as a Public Health Problem. Pub. Health Rep., 44, 35: 2093 (Aug. 30), 1929.

Nursing Economics—Although somewhat outside the strict limits of sanitation, this excellent resumé of the present status of nursing is well worth study by all sanitarians.

FOX, E. G. The Economics of Nursing. Am. J. Nurs., 39, 9: 1037 (Sept.), 1929.

Food Poisoning—An outbreak of food poisoning due to eating veal infected with *B. suipestifer* is unusual enough to warrant reporting. This one occurred in Great Britain.

GRIFFIN, A. J. B. An Outbreak of Food Poisoning Due to Salmonella Infection. Med. Off., 42, 11: 119 (Sept. 14), 1929.

Mental Hygiene—A symposium on Mental Hygiene from the point of view of the child and the adult, by a group of distinguished British physicians. The chairman raises this question in regard to the term "preventive medicine." Medicine implies healing; healing implies deviation from health. The object of preventive medicine is not to rectify deviations from health, but to prevent the necessity of "medicine."

HALL, A. J., *et al.* Mental Hygiene from the Point of View of the Child and the Adult. J. Roy. San. Inst., 50, 3: 133 (Sept.), 1929.

More Undulant Fever—Another paper covering the now familiar ground of etiology, epidemiology and laboratory diagnosis.

HARDY, A. V. Undulant Fever. J. A. M. A., 93, 12: 891 (Sept. 21), 1929.

Biology of Cancer—This paper appears to be an unprejudiced, inclusive, careful survey of the present status of our knowledge of cancer written by one who should know whereof he speaks. Beyond this the reviewer ventures no opinion.

JACKSON, H. Recent Advances in the Biology of Cancer. New England J. Med., 201, 7: 294 (Aug. 15), 1929.

Tobacco and the Heart—Out of North Carolina comes the statement that tobacco smoking has no permanent effect on blood pressure or weight. The effect of smoking is chiefly local, principally on the pharynx.

JOHNSON, W. M. Tobacco Smoking. J. A. M. A., 93, 9: 665 (Aug. 31), 1929.

Smallpox—What happens when a Massachusetts community evades the compulsory vaccination law. "Chickenpox" develops among adults. When the health authorities take a hand, they find 223 cases. Only 2 had been vaccinated and they more than 30 years before.

MACKNIGHT, R. P., and SCAMMAN, C. L. An Outbreak of Mild Smallpox in a Massachusetts Community. New England J. Med., 201, 8: 361 (Aug. 22), 1929.

Bacteria Associated with Dental Caries—Commendable restraint marks the conclusion of this report of bacteriological studies of carious mouths. Although no one has produced caries experimentally with the isolated aciduric organisms, there is yet no proof that they are not associated in some way with the disease.

MORISHITA, T. Studies on Dental Caries, with Special Reference to Aciduric Organisms Associated with this Process. J. Bact., 18, 3: 181 (Sept.), 1929.

Specificity of Scarlatinal Streptococci—From the other side of the world comes the report of the immunologic relationships between scarlatinal and other strains of hemolytic streptococci. Such widely separated studies are of value in confirming the growing knowledge of the etiology of scarlet fever.

MORIWAKI, G. The Specificity of Scarlatinal Hemolytic Streptococci. J. Bact., 18, 3: 139 (Sept.), 1929.

School Children's Eyes—Practical methods for eye examinations for young school children serve as an interesting basis for emphasizing the importance of adequate routine examinations.

RODIN, F. H. Eye Examination of School Children. J. A. M. A., 93, 12: 911 (Sept. 21), 1929.

Fertility and Economic Status—Believe it or not, poor women bear children for a longer period of years than do the richer. This is another finding from the Hagerstown Studies.

SYDENSTRICKER, E. Differential Fertility according to Economic Status. Pub. Health Rep., 44, 35: 2093 (Aug. 30), 1929.

Health Department Quarters—As a substitute for the usual corner in the cellar, adequate housing for municipal health departments is presented. Ground plans and descriptions of several plants are included.

TOBEY, J. A., and DRUMMEY, W. W. Adequate Health Department Quarters. Am. City, 41, 3: 143 (Sept.), 1929.

Urban Typhoid Fever Rates—Typhoid fever rates in the large cities have been reduced 90 per cent since 1910. Municipal sanitation and control of food supplies is largely responsible.

TOBEY, J. A. The Reduction of Urban Typhoid. Pub. Works, 60, 9 (Sept.), 1929.

Morbidity Registration Area—A tentative plan is proposed for the establishment of a National Morbidity Registration Area.

WILLIAMS, R. C. A Proposed Plan for the Establishment of a Morbidity Registration Area. Pub. Health Rep., 44, 37: 2201 (Sept. 13), 1929.

HEALTH DEPARTMENT AND OTHER REPORTS

IRA V. HISCOCK

Rockefeller Foundation—During 1928 the Rockefeller Foundation, according to its annual report, in disbursing from income and capital $21,690,738: (1) contributed to the development of medical sciences through provision of funds for land, buildings, operation, or endowment for 18 medical schools in 14 countries; (2) provided for the support of the Peking Union Medical College; (3) made minor appropriations for improving premedical instruction in China and Siam, for operating expenses of 17 hospitals in China, and for laboratory supplies, equipment, and literature for European medical centers which are still feeling the after-effects of the War; (4) through small grants assisted certain departments of medical schools in France, Italy, and Ireland which offer exceptional facilities for graduate study; (5) continued to contribute towards the advancement of the biological sciences in institutions in 4 countries; (6) assisted the development of professional public health training in 8 schools and institutes in 7 countries and in 12 field training stations in the United States and abroad; (7) gave aid to 15 nurse-training schools in 10 countries; (8) helped Brazil to combat a new outbreak of yellow fever; (9) continued studies of that disease on the West Coast of Africa; (10) took part in malaria control demonstrations or surveys in 6 of the American states and in 18 foreign countries; (11) continued contributions toward the emergency budgets of 85 county health organizations in 7 states of the Mississippi flood area; (12) aided the governments of 21 countries in fighting hookworm disease; (13) gave funds to organized rural health services in 191 counties in the United States and toward state supervision of such services in 14 states in this country, and assisted in local health work in 23 foreign countries; (14) aided in the establishment or maintenance of certain essential divisions in the national health services of 23 foreign countries and in the state health departments of 19 American states; (15) provided, directly or indirectly, fellowships for 802 men and women from 46 different countries, paid the traveling expenses of 61 officials or professors making study visits in the United States or abroad and provided similar opportunities for 127 nurses and other public health workers; (16) contributed to the work of the Health Organization of the League of Nations through the support of international interchanges of public health personnel and the development of a world-wide service of epidemiological intelligence and public health statistics; (17) lent staff members as consultants to many foreign governments; (18) made surveys of health conditions or of medical or nursing education in 5 countries; (19) collaborated with the Rockefeller Institute for Medical Research in field studies of respiratory diseases and verruga peruana; (20) assisted in mental hygiene projects in the United States and Canada, in demonstrations in dispensary development, research, and teaching in hospitals and clinics in New York City, and in numerous other undertakings in public health, medical education, and allied fields.

Some of the things which have been done to combat disease during 16 years are as follows: Temporary antihookworm campaigns in southern United States have been broadened into permanent official rural health organizations, modest, but complete. Similar developments have been aided in many tropical and semitropical regions. Else-

where local health machinery has been created or reorganized with foundation help. Malaria has been studied more fully, and methods of control have been worked out at home and abroad. Yellow fever has been forced to retreat from Mexico and Central America and from Northern South America. It is now to be found only in Brazil and West Africa. A wartime antituberculosis organization built up with foundation aid in France has been wholly taken over by the French and is being incorporated into a general public health service.

Schools or institutes of public health have been created or extended with foundation funds at the Johns Hopkins and Harvard Universities in the United States, and in Toronto, London, Prague, Warsaw, Budapest, Belgrade, Zagreb, and Sao Paulo, Brazil. Pledges have been made toward similar institutions in Angora and Calcutta. Further aid has been given to the training of health officers through participation in the maintenance of field training stations, through support to the League of Nations' plan of international study tours by health officials, and through the granting of fellowships.

Brookline, Mass.—The Brookline Board of Health presents an account of its activities for the year ending December 31, 1928, in a 50-page report. It is a satisfaction to note from the table of expenditures that substantial amounts of money have been expended in 1928 and are recommended to continue preventive work in 1929. Among these activities are immunization against diphtheria, the vaccination clinic, the school of bodily mechanics, the dental clinic, medical inspection in the schools and especially the work of the health nurses, and the clinics at the health center.

The city reports a death rate (corrected for residence) of 11.55 per 1,000 population as compared with 11.06 in 1927. Diseases of the heart (128), cancer (81), and cerebral hemorrhage (60) are the leading causes of death; cancer showing a 30 per cent increase over the 1927 figure. The number of cases of diphtheria has decreased considerably since preventive work along this line was begun in 1923. During the 5 years previous to 1923 there were 248 cases with 11 deaths, as compared to 46 cases with no deaths in the 5 years subsequent to this date.

A table showing causes of absence of pupils from the public and parochial school, as ascertained by the nurses in 1928, indicates that "colds and coughs" with 314 cases, followed by "digestive disturbances" with 121 cases, lead the list. There were 749 absences caused by illness in contrast to 313 absences due to non-sickness.

Brookline is not without its health publicity. Its *Health Bulletin* is published quarterly and distributed to every house in the city by the Police Department. "We believe it is serving the purpose of promoting education in health matters, of informing residents of the quality of the milk sold by the various dealers and of giving publicity to the various activities of the department."

Milwaukee, Wis.—The section dealing with public health activities is one of 10 sections comprising the entire 1927 report of the Common Council of the city of Milwaukee. The report, printed on paper 8" × 10", is furnished with an excellent table of contents and each section is subdivided by the use of heavy type, headings and subheadings.

The general death rate of the city was 10.4 per 1,000 population in 1927, and it is stated that Milwaukee's average death rate for the last 5 years is not excelled by any other large city.

The infant mortality rate was the lowest ever experienced in the city, being 64 per 1,000 live births.

Attendance at the 18 child welfare clinics has continued to increase materially, being 25,679 in 1927 as compared to 10,588 in 1923. There has been an attendance of 3,109 preschool children at the clinics, while 12,835 children of preschool age were visited in their homes. Because of the increase of 4 part-time physicians, the number of pupils examined by each physician has been decreased from 4,431 in 1926 to 3,878 in 1927. Physical examinations of 67,673 school children were made by these school physicians and 58,569 defects with 23,769 corrections were recommended.

There has been marked improvement in the water supply during the year, due to 3 factors: (1) the sewage disposal plant, (2) improved methods of chlorination, and (3) development of better laboratory technic.

Many additional requirements have been imposed upon milk producers. All dairy firms are required to provide mechanical capping of bottles; orders were issued requiring the use of an approved closed-top pail for milking; all producers were required to cool properly their milk before shipping to stop the growth of bacteria; and a set of rules and regulations for the proper production and handling of milk and cream was prepared by a committee representing the producers, the dealers and the health department.

Syracuse, N. Y.—The *Story of the Year* gives Syracusans: (1) information on the work done and money spent by their city government, and (2) means of offering suggestions for improving the services of the city. An organization chart of the city on the inside cover is followed by a letter from the Mayor and a 3-page statement of accomplishments of 1928, and needs of the near future. The report is effectively illustrated with photographs, charts, and graphs, with a few brief summary tables.

From the health section it is learned that 2.1 per cent of city expenditures were for conservation of health, the total amount being $279,347. The first full-time health commissioner was appointed in 1928. From a total of 45 full-time and 33 part-time employees in 1923, the personnel of the department has been increased to 94 full-time and 37 part-time employees in 1928.

A bureau of health education has been established, the nursing service has been changed from the specialized to the generalized educational form, clinic sessions have increased, and new activities have been added, such as those for crippled children, dental hygiene, prenatal and preschool services. The per capita expenditure from city funds was $1.40 and from the Milbank funds, 27 cents. This does not include medical inspection in public schools, which is under the Board of Education, amounting to 38 cents per capita.

Ninety-six per cent of all births were cared for by physicians, 66 per cent occurring in hospitals. The infant mortality rate was 58.9 per 1,000 births, while the tuberculosis mortality rate was 61.2 per 100,000 population. The ratio of reported tuberculosis cases per annual deaths was 3.2 for the year. In 10 well baby clinics, 1,195 infants were registered as having made 6,004 visits, 32 field nurses gave generalized nursing service to all the bureaus needing it.

NEWS FROM THE FIELD

COFFEE, TEA AND TOBACCO USERS

FORTY-five per cent of the male members of the freshman class at the University of Illinois last year and 21 per cent of the female members denied the habitual use of coffee, tea and tobacco. Only 30 per cent of the male members of the class professed to be users of tobacco while 50 per cent drank coffee and 20 per cent tea.

FLOATING AND SEASIDE HOSPITALS

THE Floating Hospital and the Seaside Hospital, both activities of St. John's Guild, New York, N. Y., closed their season on September 7. The Floating Hospital made 53 trips and carried 44,838 children and their mothers. Seaside Hospital in its three months' season admitted and discharged 805 children, a total service of 15,556 hospital days. About forty tonsils operations a week were performed.

WHY WHOOPING COUGH IS PREVALENT

DR. John P. Koehler, commissioner of health of Milwaukee, Wis., ascribes the failure to control whooping cough largely to the practice of allowing well children to play with coughing children. Other causes, he says, are late diagnosis and late report to the health department by the physician, the ignorance of some parents who do not "believe in" contagion, objection to having homes placarded, failure to prosecute infractions of the law, and public indifference.

ELIMINATING DIPHTHERIA IN CHILDREN'S INSTITUTIONS

AT Mooseheart School, Mooseheart, Ill., there has been only one case of diphtheria since 1920, though the average number of children in the school during that time exceeded 1,000. The resident physician ascribes this record to the fact that every child entering the school since September, 1919, has been immunized with diphtheria toxin-antitoxin. The same practice is carried out at the Soldiers' Orphans' Home at Normal, Ill., which has an average of 700 children, and no case of the disease has developed in more than three years.

787 COUNTIES NOW "FREE" OF TB CATTLE

ON September 1 there were 787 counties, located in 33 states, which had been declared by the U. S. Department of Agriculture to be "modified tuberculosis-free accredited areas." In order to receive such designation a county must have had all of its herds of cattle tuberculin tested and the extent of tuberculosis among the cattle in the county must not exceed five-tenths of 1 per cent. In all cases the cattle which react to the tuberculin test are removed and condemned for slaughter. The total of 787 counties represents a gain of 219 counties in the last 12 months. In addition to the counties, 32 towns in Vermont were designated as modified accredited areas in the course of the year.

DR. PLATT GOES TO HONOLULU

PHILIP S. Platt, Ph.D., will sail from San Francisco, Calif., November 6 for Honolulu to accept the position of Director of the Palama Settlement. He has resigned as Executive Secretary of the Associated Out-Patient Clinics Committee and assistant director of the New York Tuberculosis and Health Association, New York, N. Y.

NEW ORLEANS HOSPITAL

COMPLETION of the Catherine Cordes Voss addition to the Miles amphitheatre of Charity Hospital here is announced by Dr. Arthur Vidrine, superintendent. Three new operating rooms, three new sterilizing rooms, and the renovation of older rooms and equipment in the building to which the addition has been made, were provided at a total cost of $62,500.

VACCINATION AGAINST TUBERCULOSIS IN FRANCE

IN a recent circular the Minister of Hygiene of France asks the prefects to take the necessary measures for increasing the use of the antituberculosis vaccine and quotes the favorable opinion on this subject expressed by members of the section on hygiene of the League of Nations and of the French Academy of Medicine.

The circular directs the prefects to ask the local branches of the National Association against Tuberculosis and the local public health authorities to organize a system of preventive vaccination against tuberculosis of newborn infants and older children. The vaccination, however, is to be optional; the decision in each case is to be made by the attending physician.

INTERNATIONAL

FIFTH International Congress of Physical Therapy, Liège, Belgium, will be held September 4–8, 1930.

The congress will consist of 5 sections: (1) Kinesitheraphy, including physical education; (2) radiology (roentgen therapy); (3) hydrology, climatology and thermotherapy; (4) electrology; (5) actinology.

Chairman of committee on organization is M. de Munter, professor à la Faculté de Médecine de l'Université de Liège, Liège, Belgium.

PERSONALS

R. K. GALLOWAY, M.D., director of the Carlisle County Health Unit, Bardwell, Ky., has been given a Fellowship from the International Health Board, and will use it to take a year's work at Harvard School of Public Health.

DR. FORREST J. PINKERTON, Honolulu, was made president and Dr. Archibald N. Sinclair, Honolulu, secretary, at the annual meeting of the Hawaii Territorial Medical Association, at Honolulu.

DR. JAMES H. FLYNN has been appointed health commissioner of Troy, N. Y., to succeed the late Dr. William J. Fleming.

DR. ESMOND R. LONG, professor of Pathology of the University of Chicago, has been appointed the new editor-in-chief of the *Journal of Outdoor Life*, the official publication of the National Tuberculosis Association.

DR. SAMUEL A. LEVINSON has been elected president of the Chicago Tuberculosis Association for 1929–1930.

DR. LEWIS WADE HEIZER, formerly of the Cincinnati, O., Health Department, is the new medical inspector of Watertown, N. Y.

CONFERENCES

Nov. 4–7, 8th Annual Meeting of the American College of Therapy, Chicago, Ill.

Nov. 11–13, National Society for the Prevention of Blindness, St. Louis, Mo.

Nov. 20–22, Southern Medical Association, Miami, Fla.

Dec. 3–5, 7th Texas Sanitary Short School, Edinburg, Tex.

Dec. 6–7, New Jersey Public Health and Sanitary Association, Asbury Park, N. J.

Dec. 25–Jan. 1, Society of American Bacteriologists, Ames, Ia.

Jan. 27–30, 12th Texas Water Works Short School, Abilene, Tex.

Malnutrition, Marasmus Infantile Atrophy Athrepsia

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Maltose is the Predominating Carbohydrate in Mellin's Food

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As a starting point to carry out this entirely rational idea, the following formula is suggested:

Mellin's Food	**8 level tablespoonfuls**
Skimmed Milk	**9 fluidounces**
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This mixture furnishes 56.6 grams of carbohydrates in a form readily assimilated and thus quickly available for creating and sustaining heat and energy.

This mixture supplies 15.5 grams of proteins for depleted tissues and new growth, together with 4.3 grams of mineral salts which are necessary in all metabolic processes.

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A pamphlet devoted exclusively to this subject and a liberal supply of samples of Mellin's Food will be sent to physicians upon their request.

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